



July 2, 2019

Jason Stahr  
Plant Manager  
Archer Daniels Midland Company  
4666 Faries Parkway  
Decatur, Illinois 62526

Re: OSHA Inspection #1371014

Mr. Stahr,

An inspection of your workplace at 4666 Faries Parkway in Decatur, IL was opened on January 11, 2019. The inspection was initiated in response to a January 4, 2019 corn dust explosion/deflagration event which originated in the pre-steep section of the wet corn milling process and propagated back to the grain elevator processes via the horizontal transfer conveyor(s).

As part of the OSHA inspection, the following activities were conducted\*: 1) private employee interviews, 2) management interviews, 3) review of surveillance video of the January 4, 2019 event, 4) walkaround review of the pre and post-steep areas and related equipment, 5) review of maintenance procedures and maintenance records (i.e. preventative and non-scheduled inspections, tests, and maintenance) of the associated equipment and safety control systems, 6) review of equipment manufacturers' operation and maintenance manuals, and 7) contact with equipment manufacturer representative where appropriate. These inspection activities resulted in the following concerns being documented. These concerns were verbally shared with you and your team during the closing conference to the OSHA inspection on July 2, 2019.

*\* Please note that the inspection also involved notation of numerous corrective actions that your company had either already engaged in or were planning on completing in the near future for the purpose of preventing future occurrence. Those efforts were noted in the inspection file.*

#### Equipment Preventative Inspection, Testing, and Maintenance Practices

Numerous deficiencies in your company's preventative maintenance program were noted. In the six month period prior to the January 4, 2019 explosion and deflagration propagation event, preventative maintenance on numerous categories of process equipment was either a) not conducted at the at the frequencies established by your company or b) not conducted at the frequencies recommended by the manufacturer. Examples were documented to include, but may not be limited to, the following:

- Only (2) two of the last scheduled eight (8) bi-weekly (semi-monthly) inspections had been performed on the Divine Engineering DIVINAFLOW **West horizontal corn transfer conveyor**. Inspections were not documented as being conducted in September, November, and December of 2018.
- Weekly inspections of the Rotex MEGATEX **East and West grain cleaners** (i.e. screens) were not documented as being conducted in December of 2018.
- Several bi-weekly (semi-monthly) inspections of the Divine Engineering DIVINALATOR **MEGATEX corn cleaners discharge conveyor** had not been conducted. Inspections were not documented as being conducted in September and November of 2018. The second inspection in December of 2018 was also not documented as being conducted.
- Bi-weekly (semi-monthly) inspections of the Newell Machinery Company **East Leg bucket elevator** had not been documented as being conducted since early August of 2018.
- Bi-weekly (semi-monthly) inspections of the Union Iron **West Leg bucket elevator** had not been documented as conducted since early August of 2018.
- The 2,000 hour inspection of the California Pellet Mill Company, Inc. **#9 pellet mill** was documented as being completed in late February of 2019 despite being scheduled in late August of 2018.
- The 2,000 hour inspection of the California Pellet Mill Company, Inc. **#10 pellet mill** was documented as being completed in early November of 2018 despite being scheduled in late August of 2018 and again in mid-October of 2018.
- The quarterly inspections of the Stedman #'s **1,2,3,4,5,7 cage mills** were not being conducted timely and were often conducted later in close succession to one another.

National Fire Protection Association (NFPA) Standard 61 “Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities, 2017 ed.” Section 9.4.3 requires the owner/operator to have procedures and schedules for maintaining safe operating conditions for its facility and equipment in regard to the prevention, control, and mitigation of combustible dust fires and explosions.

#### Chemical Suppression Inspection, Testing, and Servicing

It was noted that the IEP Technologies (formerly Fenwal) chemical suppression systems used to protect various bucket elevators and dust collectors were generally being inspected, tested, and serviced on by IEP Technologies or a company authorized by the manufacturer (i.e. Getz Fire Equipment Company, Orr Protection Systems, Inc. \*\*, etc.). Review of the calendar year 2018 inspection and test reports for these systems revealed concerns with both a) the timely follow-up of inspection findings by your company and b) the completeness of inspections performed by the outside parties as compared to the requirements outlined in the applicable NFPA standard and the manufacturer’s requirements.

Additionally, two (2) chemical suppression systems installed after the January 4, 2019 event as deflagration propagation protection (isolation) devices had not been checked out and approved by the manufacturer prior to use in the facility.

Examples of documented inactivity surrounding inspection findings were documented to include, but may not be limited to, the following:

- For the MAC **North dust collector**, there was an unresolved issue regarding seals on two (2) of the high rate discharge (HRD) suppressors. The technician originally noted in the June of 2018 inspection and test report that product was witnessed product through several inspection ports and indicated that the flush spreader cap seals were either compromised or installed incorrectly and in need of replacement. The issue had yet to be resolved almost six months later as it was again noted in the inspection and test report from December of 2018.
- For the MAC **South dust collector**, there was an unresolved issue regarding the inspection port on one (1) of the HRD suppressors. The technician originally noted in the June of 2018 inspection and test report that the inspection port on one of the units was installed incorrectly. The issue had yet to be resolved almost six months later as it was again noted in the inspection and test report from December of 2018.

Examples of potential deficiencies regarding the completeness of inspections performed by outside parties include, but may not be limited to, the following:

- There were various inspection fields which were not checked or marked as not applicable for the 2018 inspection and test reports for the Newell Machinery Company **East Leg bucket elevator** and the Union Iron **West Leg bucket elevator**. These were noted as  $P_{avg}$  Setting Hg (detector pressure setting check), Exp. Element (outside visual assessment of the detectors), Int. Comp. (internal visual assessment of detector components), Ins. Res. (insulator resistance wiring check), Ind. Fuse (indicator fuse check), etc. In addition there were no fields in the reports to document a required simulated activation or “Test Fire” / “Program” and there were no fields in the reports to document the required verification of system interlocks.
- The December 2018 inspection and test report for the Union Iron **West Leg bucket elevator** documented a potential issue with the head actuator circuit and indicated that it may not work. The inspector noted that he was allowed very little time to investigate.
- The December 2018 inspection and test report for the Union Iron **West Leg bucket elevator** documented that there was no access to the head section’s three (3) HRD bottles.

Finally, two (2) chemical suppression systems were installed by your company after the January 4, 2019 event to provide deflagration propagation protection (isolation) between the pre-steep process steps and associated equipment of the wet corn milling process and the upstream grain elevator process. These systems were installed between the Rotex MEGATEX **grain cleaners**

(i.e. screens) and the Divine Engineering DIVINAFLOW **West horizontal corn transfer conveyor**. As of our April 25, 2019 site visit, these systems had not been approved by the manufacturer as being operational and effective (i.e. no system acceptance documentation).

NFPA 61 (2017) Section 9.4.1 requires that equipment affecting the prevention, control, and mitigation of fires, deflagrations, and explosions be inspected, tested, and maintained in accordance with the applicable NFPA standard. The applicable NFPA standard for chemical suppression systems is NFPA 69 “Standard on Explosion Prevention Systems, 2019 ed.”. NFPA 69 (2019) Section 10.4.3.4.1 requires that the owner/operator be responsible for the maintenance of the system after installation and acceptance (i.e. prior to use). Section 15.6 outlines the criteria for system acceptance. Section 15.7.1 requires that the systems be inspected and tested at 3-month intervals. Section 15.7.3. lists the minimum inspection requirements (i.e. elements to be inspected and type of inspection). Annex A contains an example NFPA 69 explosion prevention systems quarterly inspection form.

*\*\* Please note that similar concerns were documented based on the review of the quarterly inspection and test reports for the chemical suppression systems on the truck receiving legs (bucket elevators) east of the Grinding Room/Cleaning Room/Feed House. The quarterly inspection and test reports for the chemical suppression systems installed on these legs were not comprehensive in that they did not appear to include all of the requirements of the NFPA and the manufacturer. In addition, only one quarterly inspection and test (June 27, 2018) was able to be produced for these systems during calendar year 2018. It should also be noted that 29 CFR 1910.272(m) applies to regularly scheduled inspections of safety control equipment associated with operations covered under the scope of the standard (i.e. grain elevator processes).*

#### Lack of Explosion Protection and Deflagration Propagation Protection (Isolation) on Indoor Cyclones

Five (5) large Schenck Process MAC **pellet fines cyclones** (cyclone air-material separators) were used to separate particulate from the pellet coolers and return the fines back to the pellet mills. These cyclones were located indoors and lacked means of (1) explosion protection and (2) deflagration propagation protection (isolation) to the upstream Bliss pellet coolers.

NFPA 61 (2017) Section 8.3.4.1.1 requires that air-material separators connected to processes that are potential sources of ignition be protected with a form of explosion protection. Section 8.8.5 requires that isolation devices be provided to prevent deflagration propagation between connected equipment where determined necessary.

#### Lack of a Formal, Process Hazard Analysis for Combustible Grain Dust Explosion, Deflagration, and Fire Hazards

It was noted that your company did not have a formal process in place for the comprehensive assessment of the combustible grain dust hazards associated with the wet corn milling process and upstream grain elevator process. A dust hazards analysis (DHA) is defined by NFPA as a systematic review to identify and evaluate the potential fire, flash fire, or explosion hazards associated with the presence of one or more combustible particulate solids in a process or facility. A DHA is a critical step in determining where additional controls such as explosion protection and/or deflagration propagation protection are necessary.

NFPA 61 (2017) Section 7.1.1 requires that the owner/operator of a facility where combustible or explosible materials are present conduct a DHA in accordance with Chapter 7 of that standard. Section 7.1.2.2 requires that the DHAs be completed by June 2, 2021 for existing processes and facility compartments where bucket elevators, conveyors, grinding equipment, dust collectors, etc. are present.

Since no OSHA standards generally apply to the majority of the concerns discussed above\*\*\* (i.e. grain handling operations not covered under the scope of 29 CFR 1910.272) and it is not considered appropriate at this time to invoke Section 5(a)(1), the General Duty Clause of the Occupational Safety and Health Act, no citation(s) will be issued for these concerns as a result of this inspection.

*\*\*\* Please note that the truck receiving legs (bucket elevators) east of the Grinding Room/Cleaning Room/Feed House are covered under 29 CFR 1910.272 due to their association with the grain elevator process and any deficiencies with the preventative maintenance of the mechanical and safety systems associated those units is covered under 1910.272(m), preventative maintenance.*

In the interest of workplace safety and health, I recommend that you voluntarily take the necessary steps to eliminate or materially reduce any employee exposure associated with the concerns described above. Feasible methods of control may include, but are not limited to, the following:

- Ensure that preventative maintenance procedures are consistent with the equipment manufacturers' recommendations in terms of both nature of task and frequency of task.
- Ensure that preventative maintenance procedures are conducted as outlined by your company (i.e. timely and comprehensive).
- Ensure that all chemical deflagration systems in place have been evaluated and tested by the manufacturer to confirm operational integrity (i.e. system acceptance) prior to reliance on them in the facility.
- Allow chemical deflagration system inspectors adequate access and time to complete their inspection and testing activities.
- Promptly follow-up on and correct deficiencies noted in chemical deflagration system inspections and tests.
- Communicate to the manufacturer of the chemical suppression systems utilized at your facility that the companies they have authorized to performing quarterly inspections and tests appear to not be documenting all of the elements required under NFPA 69 and normally performed by the manufacturer. Insist that companies performing chemical suppression system inspections and tests follow all of the minimum requirements outlined in NFPA 69.

- Provide explosion and deflagration propagation protection systems (i.e. chemical suppression systems) on indoor cyclone air-material separators connected to processes associated with ignition.
- Engage and complete DHAs for processing involving grain dusts such as the wet-corn milling processes (i.e. pre-steep and post-steep) and the grain elevator processes. This is especially important since these processes for DHA have recently experienced combustible dust explosions, deflagrations, and/or fires.

OSHA welcomes any report of your efforts to remedy the above-mentioned concerns. If you have any questions concerning this matter, please feel free to contact Justin Sternes of this office.

Sincerely,

*Edward Marshall*

*for*

Barry Salerno  
Area Director