

Freeport-McMoRan Sierrita Inc.
6200 W. Duval Mine Rd.
PO Box 527
Green Valley, Arizona 85622-0527



January 30, 2019

**Via e-mail: air.permits@pima.gov and
Certified Mail: 7017 3380 0000 0803 5885**

Return Receipt Requested

Mr. Dustin Fitzpatrick
Air Compliance Manager
Pima County Department of Environmental Quality
33 N Stone Ave, Suite 700
Tucson, Arizona 85701

**Re: Notice of Violation # PC 1811-151 Response Letter
Freeport-McMoRan Sierrita Inc., Title V Air Quality Permit # 6067**

Dear Mr. Fitzpatrick:

Freeport-McMoRan Sierrita Inc. (FMSI) is in receipt of the Pima County Department of Environmental Quality (PDEQ) Notice of Violation, dated December 27, 2018, relating to fugitive dust events at FMSI's tailings dam on November 13 and November 29, 2018. As directed by that notice, FMSI is providing requested compliance documentation, including a thorough explanation of actions leading up to the event and a description of corrective actions and measures taken to prevent future violations of this type.

Actions leading up to the fugitive dust events

FMSI employs several measures to control fugitive dust from the tailings dam as identified in Attachment "B" Condition XIX.B.1.b (viii) and (ix) of the FMSI Air Quality Operating Permit No. 6067. These methods are largely designed to stabilize the surface area, with wetting and the use of chemical dust suppressants being the principal means of control. Although these measures have largely proven effective, given the size of the tailings dam, weather conditions, and the nature of high-wind events that can overwhelm currently available control measures, the control of windblown dust presents unique challenges.

FMSI tailings dam personnel have four All-track vehicles that are used to apply Magnesium Chloride ($MgCl_2$) as a dust control agent. The number of All-track vehicles necessary to provide the dust suppressant depends upon weather conditions and tailings surface conditions. As described in the Tailings Dam Dust Control Management Plan, FMSI tailings dam personnel are required to perform daily inspections which help identify signs of fatigue and areas susceptible to high wind events. The results of this inspection are used to determine the need for additional dust control measures. In addition, a weekly activities report is completed every week to detail the areas where deposition, $MgCl_2$ application and water application occurred, along with any notes the supervisor has about the weekly activities that occurred on the tailings dam related to dust control.

During the week leading up to the November 13, 2018 event, the National Weather Service forecasted high winds for November 13, 2018, which triggered FMSI to redirect efforts from berm construction and implement all efforts to dust control for the remainder of the week. During that time, FMSI deployed at least two All-track vehicles and two water trucks operating on the tailings dam that applied 102,750 gallons of $MgCl_2$ and 1,130,000 gallons of water. In addition, deposition during the week was spread on Phase 1 of the south dam to the

southwest corner of Phase 2 of the south dam. All efforts were made to provide dust control commensurate to the size and scope of the tailings dam; however, there was an area on the south dam Phase 1 that had dried at a faster rate than the surrounding areas which received deposition that week and became overwhelmed by the high sustained winds, which were in excess of 25 mph with gusts reaching up to 49 mph. An All-track vehicle was immediately dispatched to the area of concern to help mitigate any future dust emissions. On November 14 & 15, 2018, eleven totes of gorilla snot were applied to the banks of Phase 1 of the South dam. Additionally, $MgCl_2$ was applied to the interior of the banks on Phase 1 of the South dam.

After the November 13 dust event, in the weeks leading up to November 29, 2018, a total of 96,750 gallons of $MgCl_2$ and 851,000 gallons of water were applied to the tailings impoundment. According to the National Weather Service, high winds were forecasted for November 29, 2018 so all efforts were shifted towards dust control. On November 28, 2018, there were four All-track vehicles and four water trucks working on the tailings impoundment. On the day of the November 29, 2018 event, there were already four All-track vehicles operating on the tailings impoundment; however, the fugitive dust was originating from dry sections of tailings crust that were too close to the pond for any All-track vehicles to operate due to the risk of getting stuck. Efforts were made to manually spray $MgCl_2$ to as much surface area as possible that could not be reached by All-track vehicles to help mitigate any dust. In addition, the tailings supervisor adjusted the daily operating schedule to include 12-hour shifts, both day and night, to concentrate supplemental efforts on dust control. During the event, there were high sustained winds in excess of 25 mph and gusts in excess of 37 mph.

FMSI employs a very comprehensive dust control management program; however, due to the high sustained winds during subsequent dust events, dust control measures were overwhelmed and resulted in excess opacity. The corrective actions taken to return to compliance during each dust event are detailed in the excess emission and permit deviation reports submitted to PDEQ.

Corrective actions and preventive measures

To ensure compliance and to minimize the potential for a similar dust event, FMSI has identified the following actions that have or will be taken to improve dust control practices at the tailings dam:

Review and update FMSI's Tailing Dam Dust Control Management Plan

FMSI is in the process of updating its "Tailings Dam Dust Control Management Plan," (TDDCMP) to incorporate changes to address the deficiencies identified in the NOV PC1811-151. For example, FMSI will implement a contingency plan for forecasted high wind or storm events and will also develop a plan for after heavy rainfall events. In the days prior to a forecasted high wind event, FMSI will identify areas of concern using any or all of the following methods; surface area inspection, GPS tracking review and aerial observations. If appropriate, the operating shift for $MgCl_2$ application can be switched to a 24/7 operation where $MgCl_2$ is applied both manually and mechanically. Manual application of $MgCl_2$ consists of application through the use of hoses attached to an All-track vehicle. Mechanical application of $MgCl_2$ consists of application through the use of the sprays on the All-track vehicles. Applying $MgCl_2$ both manually and mechanically should allow FMSI to effectively cover any windblown tailings material collected on the interior of the active berm and in canyons, in addition to the rest of the tailings impoundment surface. This method should also allow FMSI to treat the area closest to the water's edge without getting equipment stuck in the tailings material.

After a heavy rainfall event, FMSI will inspect the tailings impoundment to determine what level of degradation has occurred. If the inspection of the tailings dam surface identifies any areas of degradation, $MgCl_2$ will be applied either manually or mechanically. If a large portion of the tailings impoundment is degraded after a heavy rainfall event, the $MgCl_2$ application will be switched to a 24/7 operation using additional resources from other departments at FMSI.

As part of FMSI's commitment to dust control at the tailings dam, FMSI is in the process of investigating new technologies and innovative control methods. FMSI's environmental group is conducting a dust suppressant study on the inactive Esperanza Tailings Impoundment. FMSI has also installed GPS units on All-track vehicles to better track dust suppression applications. FMSI is continually trying to utilize the best available work practices and dust control technology to manage the tailings impoundment. The FMSI Environmental and Tailings Dam teams are working together to ensure the upcoming revision of the TDDCMP will include the most effective means to control dust. FMSI will submit a revised plan to PDEQ by March 31, 2019.

Evaluate local aerial MgCl₂ application companies

FMSI is in the process of evaluating a local aerial MgCl₂ application company. The evaluation will include the effectiveness of aerial application, the possible airports that the aircraft will depart from, if the airports will allow MgCl₂ to be stored in bladders on the airport property, the corrosivity factor of MgCl₂ on the aircraft, the availability of a pilot and aircraft and total cost of operation.

New procedure for operating All-track vehicles near the water's edge

FMSI has changed the way we are operating All-track vehicles in order to allow vehicles to get nearer the water's edge and thus allow for more effective mechanical application without getting All-track equipment stuck in the tailings material. FMSI does not fill the All-track tanks to full capacity which lightens the weight of the load which allows the All-track vehicle to get nearer the water's edge. In addition, a spotter walks in front of the All-track vehicle to inspect the softness of the tailings material to ensure that the All-track operator does not drive into an area that is too soft.

Personnel Scheduling

As discussed above, FMSI revised its schedule for tailings personnel to allow the facility to stabilize the surface of the impoundment. FMSI will continue this scheduling flexibility according to weather forecasts, surface conditions on the tailings dam observed during Daily Surface Area inspections and aerial drone photos, as well as, data from the GPS Trimble system. FMSI management approved 24/7 shifts and weekend shifts for assistance in applying the dust suppressant to the tailings dam surface if needed. The availability of these employees will help ensure commensurate measures are taken to address high wind events before and after they occur.

Tailings Dust Control Management Team

FMSI has recently formed a Tailings Dust Control Management Team that focuses exclusively on controlling dust in and around the tailings impoundment. This team consists of Tailings and Environmental department personnel. The team tracks Key Performance Indicators and on-going projects that are focused on improving dust control practices. As a part of this process, the team has visited the Morenci Mine and the Asarco Mine to gain a better understanding of dust control management practices utilized at other mine sites. Some of these practices, such as the manual hose application of MgCl₂ have already been implemented at FMSI. The team will continue to evaluate best management practices for tailings dam dust control.

Aerial Drone Audit Pilot Program

FMSI is conducting a pilot program to fly a drone over the impoundment to take pictures of the condition of the impoundment. The areas of focus will be in areas that have not received deposition and could become hotspots in a high wind or storm condition. The aerial photos will be evaluated to determine if they provide a useful view of the entire dam and can be used in conjunction with the daily surface area inspection.

Tailings Dust Control Team

FMSI has approved an increase in headcount and has begun the hiring process. The dust control team positions will focus on dust control efforts in areas on and around the tailings impoundment. This team will inspect the dam, apply $MgCl_2$ both manually and mechanically, operate water trucks, track the weather patterns and prepare for upcoming storm or wind events.

GPS Units on All-track Vehicles

In April of 2018, FMSI installed GPS units on the All-track vehicles. The GPS units give FMSI the opportunity to better track the areas of All-track application. This software, if used in conjunction with daily surface area inspection and aerial photos will help FMSI identify any areas of the impoundment that did not receive $MgCl_2$ application.

Dust Suppressant Study

FMSI has identified that our reportable events frequently occur due to damage sustained during the monsoon season and are exploring other options for dust suppressants during that time of year. In July of 2018, FMSI started a dust suppressant study on the inactive Esperanza Tailings Impoundment. The purpose of this study is to experiment with various dust suppressant products during monsoon season to identify if any were able to stand up to the monsoon storms. The study is ongoing and we have identified some promising products that will be presented to the Tailings Stewardship Team for approval for experimental application on the active tailings impoundment.

FMSI is committed to continuous improvement of its dust control measures at the tailings impoundment. If there are additional concerns or questions regarding these responses, please contact Natalie Nunez, Senior Environmental Scientist, at (520) 393-2376.

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete.

David Rhoades, President and General Manager



(Signature)



(date)