

**INFORMATION REQUEST**  
**FMC Response**  
May 17, 2010

**EPA Request 1**

*For the time period beginning January 1, 2003 through to the present, provide the results of any and all monitoring, testing or sampling of source gas from temperature monitoring points (TMPs) or perimeter piping systems, soil gas, and ambient air for phosphine and other hazardous gases at and in the vicinity of all of the ponds and other locations at the Facility where phosphorus containing waste and materials have been placed or disposed of. This request does not include Pond 16S results that have already been provided and temperature and pressure data and records from pond temperature and pressure sensors.*

FMC Response:

This response is not yet complete. A complete response will be provided in two phases. First, for results from January 1, 2006 through the present, a complete response will be provided by June 10, 2010. A second response with results for the period from January 1, 2003 to January 1, 2006 will be provided by July 10, 2010. As FMC has discussed with EPA, as an interim response we are providing here the information that is readily available from our files with the goal of assisting near-term efforts to develop a site-wide phosphine sampling plan. The information provided with this response consists of the following attachments:

1. Five figures showing areas of the FMC plant site and phosphine soil gas results collected on March 13, 2009.
2. Table of TMP screening observations made over the past approximately three years. These screening observations were collected as follows. First, each TMP was fitted with a valved gas sample collection port, which pursuant to the current RCRA Post-Closure Plans (PCPs), was to be used to collect a gas sample if pressure or temperature data collected pursuant to that PCP exceeded certain thresholds. On various occasions in the past three years, this valve has been opened and a Draeger Pac III field instrument, without a sampling pump, has been held against the open port for approximately one minute to allow the concentration to stabilize. The highest value and the stabilized value have been recorded. While these screening observations are clearly not representative of the concentration of PH<sub>3</sub> throughout the TMP, as no gas extraction or purge was established, they do provide an indication as to the amount of PH<sub>3</sub> that may have accumulated at the waste layer. In some instances, the screening observations are highly variable. In other instances, more consistent readings have been noted. The screening observations can be of use in developing the site-wide phosphine monitoring program but due to

these sampling issues the observations should not be relied upon beyond this program.

3. A February 19, 2008 memorandum titled "Field Screening Tests of Zinc Phosphide Based Rodenticide."
4. Tables of Pond 8S Soil Gas Monitoring Results 2000-2008 collected pursuant to the approved RCRA Post-Closure Plan for that pond.
5. May 28, 2004 Open Path FTIR Pond Air Monitoring system Report – the final report submitted pursuant to the Pond Management Plan.
6. A copy of a drawing of Pond 15S with hand written notes indicating near-surface phosphine concentrations.
7. A table listing historic Industrial Hygiene (IH) survey data at pond TMPs. This was previously provided as an attachment to a May 7, 2010 letter to Carla Fisher identified as relating to "Pond 15S & Updates."
8. A figure noting the results of a survey of RCRA pond manholes/sump on April 30, 2010. This was previously provided as an attachment to a May 7, 2010 letter to Carla Fisher identified as relating to "Pond 15S & Updates."

FMC continues to work with its current Operation and Maintenance contractors to identify other information that is responsive to this information request. Specifically, RCRA post-closure log books and field inspection forms and Pond 16S GETS log books and field inspection forms are being reviewed to identify instances where the results of monitoring or sampling for phosphine or other hazardous gas may have been noted. All such notations of phosphine readings will be submitted in the two follow-up submittals as described above. Contractors that have previously worked at the site also will be contacted and we will request that they review their materials to identify any notations or records of phosphine readings.

## **Request 2**

*On April 26, 2010, FMC provided EPA with the "FMC Report on Phosphine at FMC Pond 15S." The report was provided in response to EPA Questions, dated April 19, 2010. EPA requests that FMC provide any and all information, corrections or clarifications to the extent necessary to provide a complete and accurate response to the EPA questions.*

### FMC Response:

On April 26, 2010, FMC responded to EPA questions contained in an email dated April 19, 2010. FMC supplemented the April 26, 2010 letter with additional information on May 7, 2010. These are both supplemented with this letter, and as work continues to respond to Request Item 1, will be further supplemented in additional responses, e.g., copies the log book entries identified in the April 26, 2010 letter will be provided along with any other responsive information. FMC believed these letters to be complete and accurate at the time sent, and continues to believe this to be the case.

### Request 3

*Provide the analysis and all of the data, information and calculations that FMC used to come to the conclusion that releases of phosphine facility-wide, including from Pond 16S, are less than 10 lbs per day, as stated in the "FMC Report on Phosphine at FMC Pond 15S" provided to EPA on April 26, 2010.*

#### FMC Response:

Potential sources of phosphine emissions include (1) leakage from TMPs, (2) tail gas discharge from Pond 16S GETS, (3) tail gas discharge from GES system(s), and (4) leakage from the Pond 15S cap drainage manhole. An estimate for each source is provided below:

1. From all TMP (58 total all ponds)

Enclosure size 3' x 2.5' x 2.5' = 18.75 cu ft each or 1,087.5 cu ft total

These are neither air tight, nor water tight boxes, and located on top of ponds, in elevated locations, and are subject to significant exposure to weather. Assume extended high wind conditions, resulting in 6 air changes per hour in the box. Assume continues 24 hour/day = 156,600 cu ft/day, at 0.3 ppm and PH3 density = 0.094 lb/ cu ft.

$156,600 \times 0.3/1,000,000 \times 0.094 = \mathbf{0.00442 \text{ lb / day}}$

2. From GETS at Pond 16S (conservative use action level 0.2 ppm, usually 0.0 )

2,200 cfm, 24hr/day,  $2,200 \times 60 \times 24 \times 0.2/1,000,000 \times 0.094 = \mathbf{0.05956 \text{ lb/day}}$

3. One GES operating (conservative use PH3 level 0.3 ppm, usually 0.0 )

100 cfm/unit, 24 hr/day

$100 \times 60 \times 24 \times 0.3/1,000,000 \times 0.094 = 0.0041 \text{ lb/day/unit}$

At this time, there are four GESs in operation, so **0.0162 lb/day**

4. Lift station leak

6' diameter x top section 4' = 113 cu ft. Lift station is not elevated, and is protected from weather by the pond berm. Assume leakage through the water tight (not gas tight) ring in the concrete section results in evacuating the top section every two hours. Assume 12 air changes per day and concentration of 25,000 ppm

$113 \times 12 \times 25,000/1,000,000 \times 0.094 = \mathbf{3.1866 \text{ lb/ day}}$

**Estimate, site wide total: 0.0044 + 0.0596 + 0.0162 + 3.1866 = 3.27 lb/ day.**