242-A Evaporator Campaign-07

Industrial hygiene sampling and monitoring results

Key Performance Parameter #1
Engagement and Effectiveness Measurement
Area monitoring and sampling was conducted throughout the campaign – from August 23, 2017 through September 7, 2017

- **Continuous Area Monitoring** was conducted via stationary Direct Reading Instrumentation (DRI)

- **Intermittent Area Monitoring** conducted via handheld DRI

- **40 Personal** and **2 Area Samples** were collected for measurement of COPCs.
• Approximately **126,000** area readings from Direct Reading Instruments (DRIs) were collected using 12 AreaRAEs to continuously monitor around the A-Complex beginning the evening of August 23rd.

• Of those readings, ~**10,500** were collected from the 242-A parking lot.

• Area DRI Sweeps conducted by industrial hygiene technicians (IHTs), utilizing more sensitive handheld instrumentation, provided ~**1000** additional DRI readings.

• DRI readings in the general work area were **well BELOW** Action Limits and Occupational Exposure Limits.
Area DRI readings continued

Instrument Detection Limits (DL):
- AreaRAE Multi-Gas Monitor
  - Ammonia: > 0 ppm
  - VOCs: >0.10 ppm
- MultiRAE PRO Volatile Organic Compound and Multi-Gas Monitor
  - Ammonia: > 0 ppm
  - VOCs: 10 ppb (0.010 ppm)
- Lumex RA-915M Mercury Vapor Analyzer
  - Mercury: 20 ng/m³

Action Levels
- Ammonia 12 ppm
- VOC 2 ppm
- Mercury 0.0125 mg/m³ or 12,500 ng/m³

AreaRAE Location | Ammonia | Total VOCs* |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>242-A Parking Lot</td>
<td>2.1 ppm</td>
<td>1.9 ppm</td>
</tr>
<tr>
<td>West of AW Farm</td>
<td>2.4 ppm</td>
<td>1.4 ppm</td>
</tr>
</tbody>
</table>

Note: Highest average reading over a 60 sec. sampling period listed for above locations

* Instrument 2420 recorded a peak reading of 25.6 ppm VOCs at 0929 on 9-7-17. Painters were applying Amerlock within 10 feet of the AreaRAE, it was moved 20 feet North and VOC readings declined to a normal baseline/ AreaRAEs were left out from 9/6/17 nights into 9/7/17 day shift due to the anticipated shutdown of the evaporator campaign in the early afternoon.

Sweep Location | Ammonia | Total VOCs | Mercury |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>242-A Parking Lot</td>
<td>&lt;DL</td>
<td>0.020 ppm</td>
<td>47 ng/m³</td>
</tr>
<tr>
<td>242-A Control Room</td>
<td>&lt;DL</td>
<td>0.030 ppm</td>
<td>51 ng/m³</td>
</tr>
<tr>
<td>A-Complex Perimeter</td>
<td>&lt;DL</td>
<td>0.090 ppm</td>
<td>121 ng/m³</td>
</tr>
</tbody>
</table>

Note: Highest readings listed for above locations
242-A Evaporator Campaign-07
Source DRI Readings

Waste Disturbing*

- **AP Exhauster**
  - Ammonia 52 ppm
  - Mercury <0.05 mg/m3
  - Total VOC 3.84 ppm

- **AW Exhauster**
  - Ammonia 40 ppm
  - Mercury <0.05 mg/m3
  - Total VOC 2.5 ppm

- **Vessel Vent**
  - Ammonia 91 ppm
  - Mercury <0.05 mg/m3
  - Total VOC 8.76 ppm

**Highest readings listed above for Waste Disturbing**

**Elevated reading found to have been caused by sampling line contamination**

Static

- **AP Exhauster**
  - Ammonia 51 ppm
  - Mercury <0.05 mg/m3
  - Total VOC 47 ppm**

- **AW Exhauster**
  - Ammonia 17 ppm
  - Mercury <0.05 mg/m3
  - Total VOC 1.57 ppm

**Action Levels**

**INFORMATION ONLY**

- Ammonia 12 ppm
- Mercury 0.0125 mg/m3 or 12,500 ng/m3
- VOC 2 ppm

Action Levels are NOT applicable to Source Readings

*Highest readings listed above for Waste Disturbing

** Elevated reading found to have been caused by sampling line contamination
Personal and Area Sampling

**40 Personal Sample Sets**

- 1 sample obtained during slurry sampling:
  - 3 analytes >LOD and ≤0.002 OEL
- 18 samples obtained during HPT walk-downs:
  - 15 analytes >LOD and ≤5.6% OEL
- 21 samples obtained during IHT enhanced monitoring
  - Results still pending

**2 Area Sample Sets**

- East side of AW Farm.
  - 6 analytes >LOD and ≤1.2% OEL.
- Outside the 271-AW Instrument Control Building.
  - All results >LOD

Some sample results are pending

An update will be provided after **ALL** analytical data is received

LOD: Limit of detection
26 Chemicals Monitored
(source readings; action levels not applicable)

- Stack analyzer results have not been analyzed at this time.

*Stack analyzer results are pending*

An update will be provided after analyzer data is received
EC-07 Campaign Timeline

- **August 24, 2017**
  - ALC’s run prior to campaign

- **August 25, 2017**
  - 242A enters Operations mode and initiates feed

- **August 26, 2017**
  - Slurry out to AP Farm begins

- **August 29, 2017**
  - Process upset condition occurs and 242A is shutdown

- **September 1, 2017**
  - 242A enters Operations mode and initiates feed

- **September 2, 2017**
  - Slurry out to AP Farm begins

- **September 7, 2017**
  - 242A enters Shutdown mode
Questions?

Please contact:

The Chemical Protection Program Office

WRPSCPPO@ri.gov