

# Environmental Reportable Events Summary



<b>Event Date:</b> 01/19/2023					
<b>Event Title:</b> No. 1 Fluidized Catalytic Cracking Unit (FCCU) Opacity Exceedance					
<b>Impacted Media</b> (air, water, or soil): Air					
<b>Operating Unit:</b> Plant 1 No. 1 FCCU					
<p><b>Event Summary:</b>                  On January 19, 2023, the Plant 1 No. 1 FCCU opacity limit was exceeded during a planned maintenance event while the unit was offline. The 6-minute opacity event occurred when the No. 1 FCCU regenerator main air blower, C-16, was started to enable the withdrawal of catalyst from the regenerator for maintenance activities associated with the Refinery's recovery plan. Suncor Operators followed protocols to minimize opacity.</p> <p>The event started at 10:54 a.m. and ended at 11:00 a.m. on January 19, 2023, when operators stabilized air flow to the No. 1 FCCU regenerator.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>					
<table border="1"> <thead> <tr> <th>Permit Term or Condition</th> <th>Reported Value</th> </tr> </thead> <tbody> <tr> <td>Opacity not to exceed 20% (6-minute average)</td> <td><b>37%</b> opacity (6-minute average)</td> </tr> </tbody> </table>		Permit Term or Condition	Reported Value	Opacity not to exceed 20% (6-minute average)	<b>37%</b> opacity (6-minute average)
Permit Term or Condition	Reported Value				
Opacity not to exceed 20% (6-minute average)	<b>37%</b> opacity (6-minute average)				
<p>The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.</p>					
<b>Event Date:</b> 01/20/2023					
<b>Event Title:</b> Plant 2 Flare Gas H <sub>2</sub> S Exceedance					
<b>Impacted Media</b> (air, water, or soil): Air					
<b>Operating Unit:</b> Plant 2 Main Plant Flare					
<p><b>Event Summary:</b>                  On January 20, 2023, the Plant 2 flare gas hydrogen sulfide (H<sub>2</sub>S) limit was exceeded. The suspected cause of this exceedance was an internal leak of a valve between the Unsaturated Unit and the No. 2 Fluidized Catalytic Cracking Unit (FCCU). The internal leak of the Unsaturated Unit gases to the No. 2 FCCU led to depressurization of the No. 2 FCCU's main column to the flare. H<sub>2</sub>S is combusted at the flare tip, which results in the generation of sulfur dioxide (SO<sub>2</sub>) and water vapor.</p> <p>This event started at 9:00 a.m. and ended at 11:00 a.m. on January 20, 2023.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>					
<table border="1"> <thead> <tr> <th>Permit Term or Condition</th> <th>Reported Value</th> </tr> </thead> <tbody> <tr> <td>162 ppm H<sub>2</sub>S in flare gas for a 3-hour average</td> <td><b>219 ppm</b> H<sub>2</sub>S in flare gas for a 3-hour average</td> </tr> </tbody> </table>		Permit Term or Condition	Reported Value	162 ppm H <sub>2</sub> S in flare gas for a 3-hour average	<b>219 ppm</b> H <sub>2</sub> S in flare gas for a 3-hour average
Permit Term or Condition	Reported Value				
162 ppm H <sub>2</sub> S in flare gas for a 3-hour average	<b>219 ppm</b> H <sub>2</sub> S in flare gas for a 3-hour average				
<p>The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.</p>					

*\*Information in this report is based on the facts known to Suncor Energy (U.S.A.), Inc. at the time of preparation. We may update or change the information contained herein if and to the extent additional facts become available.*

# Environmental Reportable Events Summary



<b>Event Date:</b> 01/25/2023	
<b>Event Title:</b> Outfall Water Permit Exceedance	
<b>Impacted Media</b> (air, water, or soil): Water	
<b>Operating Unit:</b> Outfall No. 020A	
<b>Event Summary:</b>	
<p>As part of Suncor's weekly compliance sampling program, a water sample at Outfall 020A was collected, analyzed, and found to exceed the 5 µg/L daily maximum permit limit for benzene on January 25, 2023. Suncor subsequently performed daily sampling for benzene at the outfall through February 1, 2023, which showed that the benzene limit was also exceeded on January 26 and 28, 2023.</p> <p>Results of voluntary surface water sampling in Sand Creek downstream of Outfall 020A performed during this period showed benzene concentrations of less than 2 µg/L, which is below the EPA's drinking water maximum contaminant level of 5 µg/L.</p> <p>The initial investigation of the incident indicates that the elevated benzene concentrations are related to Suncor's wastewater treatment system biological reactors, where most of the treatment for benzene occurs. Because the refinery's process units were offline during the month of January, the characteristics of the wastewater going into the biological reactors changed, resulting in a reduction in biological activity and a corresponding drop in treatment efficiency. This issue was exacerbated by below average air temperatures in the area during the month. In response, Suncor made adjustments to the wastewater treatment system to reduce benzene concentrations to below the permit limit for Outfall 020A.</p> <p>Continued investigation into the event identified an additional likely causal factor. It was determined that at least some portion of the elevated benzene concentration observed at Outfall 020A was likely due to groundwater infiltration into the wastewater treatment system effluent line upstream of the outfall. Suncor has pumped down the groundwater to eliminate the infiltration and has scheduled repairs to reseal the line.</p> <p>Sampling at Outfall 020A performed on January 27, 29, 30, 31, and February 1, 2023, showed benzene concentrations below the permit limit.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>	
<b>Permit Term or Condition</b>	<b>Reported Value</b>
5 µg/L benzene (January 25, 2023 daily maximum)	6 µg/L benzene
5 µg/L benzene (January 26, 2023 daily maximum)	13 µg/L benzene
5 µg/L benzene (January 28, 2023 daily maximum)	7 µg/L benzene

*\*Information in this report is based on the facts known to Suncor Energy (U.S.A.), Inc. at the time of preparation. We may update or change the information contained herein if and to the extent additional facts become available.*

# Environmental Reportable Events Summary



<b>Event Date:</b> 02/01/2023 and 02/03/2023							
<b>Event Title:</b> Plant 1 Flare Gas H <sub>2</sub> S Exceedance							
<b>Impacted Media</b> (air, water, or soil): Air							
<b>Operating Unit:</b> Plant 1 Main Plant Flare							
<p><b>Event Summary:</b>                      On February 1 and 3, 2023, the Plant 1 flare gas hydrogen sulfide (H<sub>2</sub>S) limit was exceeded while maintenance work was being performed in the Amine Unit. During the process of de-inventorying contaminated amine to replace with clean amine, sour gases backed up from the Catalytic Polymerization Unit's amine contactor tower to the fuel gas absorber and rich amine flash drum, and ultimately vented to the flare. H<sub>2</sub>S is combusted at the flare tip, which results in the generation of sulfur dioxide (SO<sub>2</sub>) and water vapor. To prevent gases from flowing back and venting to flare, Suncor Operators blocked the isolation valves from the Catalytic Polymerization Unit's amine contactor tower. In addition, during the clean amine refill process, Operators moved water from the amine surge drum to the rich amine flash drum to block vapors from venting to the flare.</p> <p>The Plant 1 flare gas H<sub>2</sub>S limit was exceeded from 6:00 p.m. on February 1, 2023, to 2:00 a.m. on February 2, 2023, and from 11:00 a.m. to 6:00 p.m. on February 3, 2023. The event ended as soon as the amine de-inventory process concluded.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>							
<table border="1"> <thead> <tr> <th>Permit Term or Condition</th> <th>Reported Value</th> </tr> </thead> <tbody> <tr> <td>162 ppm H<sub>2</sub>S in flare gas for a 3-hour average</td> <td><b>212 ppm</b> H<sub>2</sub>S in flare gas for a 3-hour average</td> </tr> <tr> <td>162 ppm H<sub>2</sub>S in flare gas for a 3-hour average</td> <td><b>226 ppm</b> H<sub>2</sub>S in flare gas for a 3-hour average</td> </tr> </tbody> </table>		Permit Term or Condition	Reported Value	162 ppm H <sub>2</sub> S in flare gas for a 3-hour average	<b>212 ppm</b> H <sub>2</sub> S in flare gas for a 3-hour average	162 ppm H <sub>2</sub> S in flare gas for a 3-hour average	<b>226 ppm</b> H <sub>2</sub> S in flare gas for a 3-hour average
Permit Term or Condition	Reported Value						
162 ppm H <sub>2</sub> S in flare gas for a 3-hour average	<b>212 ppm</b> H <sub>2</sub> S in flare gas for a 3-hour average						
162 ppm H <sub>2</sub> S in flare gas for a 3-hour average	<b>226 ppm</b> H <sub>2</sub> S in flare gas for a 3-hour average						
<p>The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.</p>							
<b>Event Date:</b> 02/10/2023							
<b>Event Title:</b> No. 2 Fluidized Catalytic Cracking Unit (FCCU) Startup Exceedance							
<b>Impacted Media</b> (air, water, or soil): Air							
<b>Operating Unit:</b> Plant 2 No. 2 FCCU							
<p><b>Event Summary:</b>                      On February 10, 2023, the Plant 2 No. 2 FCCU opacity limit was exceeded during the startup process of the unit. The opacity occurred when the No. 2 FCCU regenerator main air blower was started to initiate the startup process of the unit. Suncor Operators followed protocols to minimize opacity.</p> <p>The event began at 11:06 p.m. on February 10, 2023, and was resolved at 11:18 p.m. when operators stabilized the compressor air flow to the No. 2 FCCU regenerator.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>							
<table border="1"> <thead> <tr> <th>Permit Term or Condition</th> <th>Reported Value</th> </tr> </thead> <tbody> <tr> <td>Opacity not to exceed 20% (6-minute average)</td> <td><b>26%</b> opacity (6-minute average)</td> </tr> </tbody> </table>		Permit Term or Condition	Reported Value	Opacity not to exceed 20% (6-minute average)	<b>26%</b> opacity (6-minute average)		
Permit Term or Condition	Reported Value						
Opacity not to exceed 20% (6-minute average)	<b>26%</b> opacity (6-minute average)						
<p>The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.</p>							

*\*Information in this report is based on the facts known to Suncor Energy (U.S.A.), Inc. at the time of preparation. We may update or change the information contained herein if and to the extent additional facts become available.*

# Environmental Reportable Events Summary



<b>Event Date:</b> 02/12/2023					
<b>Event Title:</b> Sulfur Pit (Tank 2005) Vent to Atmosphere					
<b>Impacted Media</b> (air, water, or soil): Air					
<b>Operating Unit:</b> Plant 1 Sulfur Recovery Complex					
<p><b>Event Summary:</b>                  On February 12, 2023, the Tail Gas Unit incinerator (H-25) had to be taken offline to perform critical electrical substation work, resulting in the opening of the vent on the Plant 1 Sulfur Recovery Complex sulfur tank (T-2005) to prevent damage to the tank during the work. Normally, the vent on T-2005 must remain closed and emissions from T-2005 must be routed to H-25. Before opening the T-2005 vent to atmosphere, Suncor turned off the T-2005 heating coils to allow the sulfur in the tank to solidify. The tank temperature and gas flow indication were monitored to ensure that the sulfur had completely solidified, and the tank was no longer releasing vapors. Additionally, the de-gassing air was turned off to prevent any sulfur gases from being released into the atmosphere through the vent. These safety measures were taken to ensure that the vent opening was done with minimal environmental impact.</p> <p>The event began February 12, 2023, at 3:31 p.m. and ended on February 13, 2023, at 5:24 a.m., once the substation work was completed and power was restored, allowing H-25 to be brought back online.</p> <p>The specific permit exceedances for this event were:</p>					
<table border="1"> <thead> <tr> <th>Permit Term or Condition</th> <th>Reported Value</th> </tr> </thead> <tbody> <tr> <td>Emissions from sulfur pit (T-2005) are routed to the TGU and vented through the TGU incinerator (H-25)</td> <td>Sulfur pit emissions vented to atmosphere</td> </tr> </tbody> </table>		Permit Term or Condition	Reported Value	Emissions from sulfur pit (T-2005) are routed to the TGU and vented through the TGU incinerator (H-25)	Sulfur pit emissions vented to atmosphere
Permit Term or Condition	Reported Value				
Emissions from sulfur pit (T-2005) are routed to the TGU and vented through the TGU incinerator (H-25)	Sulfur pit emissions vented to atmosphere				
<p>The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.</p>					
<b>Event Date:</b> 02/15/2023					
<b>Event Title:</b> No. 2 Fluidized Catalytic Cracking Unit (FCCU) Startup Exceedance					
<b>Impacted Media</b> (air, water, or soil): Air					
<b>Operating Unit:</b> Plant 2 No. 2 FCCU					
<p><b>Event Summary:</b>                  On February 15, 2023, the Plant 2 No. 2 FCCU carbon monoxide (CO) limit was exceeded during the startup process of the unit. The elevated CO emissions occurred as a result of the restart of the No. 2 FCCU air pre-heater as part of the planned startup of the unit. The CO emissions were brought under control after the unit was stabilized following startup activities.</p> <p>This event began at 1:00 p.m. and ended at 5:00 p.m. on February 15, 2022, once the unit was stabilized.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>					
<table border="1"> <thead> <tr> <th>Permit Term or Condition</th> <th>Reported Value</th> </tr> </thead> <tbody> <tr> <td>500 ppm CO at 0% O2 for a 1-hour average</td> <td>806 ppm CO at 0% O2 for a 1-hour average</td> </tr> </tbody> </table>		Permit Term or Condition	Reported Value	500 ppm CO at 0% O2 for a 1-hour average	806 ppm CO at 0% O2 for a 1-hour average
Permit Term or Condition	Reported Value				
500 ppm CO at 0% O2 for a 1-hour average	806 ppm CO at 0% O2 for a 1-hour average				
<p>The Commerce City North Denver Air Monitoring network of sensors within a three-mile radius of the refinery did not detect any levels above the acute health reference guidelines during this event.</p>					

*\*Information in this report is based on the facts known to Suncor Energy (U.S.A.), Inc. at the time of preparation. We may update or change the information contained herein if and to the extent additional facts become available.*