

Environmental Reportable Events Summary



Event Date: June 20, 2023
Event Title: Tank 6 Crude Oil Overflow and Product on the Roof
Impacted Media (air, water, or soil): Air / Soil
Operating Unit: Plant 2 Oil Movements Division (OMD-2)
Event Summary: On June 20, 2023, at approximately 10:00 p.m., crude oil was discovered overflowing the top of Tank 6, which is an internal floating roof tank, during a product transfer to the tank. The transfer to the tank was immediately halted. Crude oil had flowed out of the tank vents, down the tank, and onto soil. Vacuum trucks were deployed to remove the liquids and recovery of liquids via vacuum trucks began at approximately 2:00 a.m. on June 21, 2023. An estimated 45 barrels of crude were released to soil. Upon subsequent inspection of the tank, crude oil was found on the internal floating roof of the tank. Additionally, the tank's radar level gauge was found to be malfunctioning, which may have contributed to the overflow incident. Suncor promptly responded to the incident by containing the leak, cleaning the contaminated soil around the tank, and removing all oil from the internal floating roof. 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.

Event Date: June 23-26, 2023
Event Title: Plant 2 No. 3 Sulfur Recovery Unit (No. 3 SRU) Upset
Impacted Media (air, water, or soil): Air
Operating Unit: Plant 2 No. 3 SRU
Event Summary: On June 23, 2023, during the startup of Plant 2 following a planned turnaround event, a series of equipment malfunctions and process upsets in the No. 3 Sulfur Recovery Unit (No. 3 SRU) resulted in acid gases, normally processed and treated in the sulfur recovery complex, to be routed to the Plant 2 fuel and flare gas systems. This resulted in hydrogen sulfide (H ₂ S) exceedances in the Plant 2 fuel and flare gas systems, and sulfur dioxide (SO ₂) emissions exceedances from the Plant 2 Main Plant Flare. H ₂ S is combusted at the flare tip, which results in the generation of SO ₂ and water vapor. During the startup of the No. 3 SRU amine system, foaming occurred in the amine solution due to particulate contamination. While it is common to have particulate contamination during the startup of the unit, the particulate contamination was worsened because the particulate filters were mistakenly bypassed during the startup of the unit. Suncor operations personnel promptly responded to the incident and added anti-foaming agents to reduce the formation of foam, and rerouted acid gases from the thermal reactor to the Plant 2 Main Plant Flare to protect the thermal reactor from hydrocarbon contamination. This contributed to elevated SO ₂ emissions from the flare. Once the amine solution was replaced and the particulate filters were placed online, the sulfur recovery efficiency of the Plant 2 sulfur recovery complex returned to normal, and the exceedances ceased. Furthermore, as the Plant 2 acid gas producing units came online, the No. 3 SRU experienced multiple equipment malfunctions and operational issues including a malfunction of the sulfur pit eductor steam regulator, a plug in the sulfur pit eductor line, and foaming in the amine system, all of which complicated the startup process. Suncor operations personnel worked diligently to reestablish safe and normal operations at the sulfur pit, and rerouted acid gas streams several times between the thermal reactor and the Plant 2 Main Plant Flare until operational stability was restored. This also contributed to the elevated SO ₂ emissions from the flare.

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The event began on June 23, 2023, at 8:00 a.m. and continued intermittently until June 26, 2023, at 2:00 p.m. The environmental exceedances stopped once the amine system and sulfur pit operational issues were resolved.

The specific permit terms or conditions exceeded for this event include:

Permit Term or Condition	Maximum Reported Value	Event Duration
June 23, 2023		
162 ppm H ₂ S in flare gas (3-hr rolling average)	329 ppm H ₂ S in flare gas (3-hr rolling average)	15 hours
162 ppm H ₂ S in fuel gas (3-hr rolling average)	300 ppm H ₂ S in fuel gas (3-hr rolling average)	11 hours
500 lb SO ₂ Refinery-wide 24-hr rolling period (EPCRA Reportable Quantity)	> 500 lbs SO ₂ (maximum 24-hr rolling total during the event)	21 hours
June 25, 2023		
162 ppm H ₂ S in flare gas (3-hr rolling average)	169 ppm H ₂ S in flare gas (3-hr rolling average)	2 hours
June 26, 2023		
162 ppm H ₂ S in flare gas (3-hr rolling average)	176 ppm H ₂ S in flare gas (3-hr rolling average)	1 hour

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.

Event Date: June 24, 2023
Event Title: Plant 1 Sulfur Tank (T-2005) Vent to Atmosphere
Impacted Media (air, water, or soil): Air
Operating Unit: Plant 1 Sulfur Recovery Complex
<p>Event Summary: On June 24, 2023, a small leak was found in one of the two eductors that move gases with hydrogen sulfide (H₂S) from the sulfur tank (T-2005) at the Plant 1 sulfur recovery complex to the Tail Gas Unit incinerator (H-25). Suncor operators promptly responded to the incident and temporarily opened the vent to atmosphere on T-2005 to make it safe for operations to isolate the leak and conduct the critical maintenance work and prevent pressure buildup inside the tank. Normally, the vent on T-2005 must remain closed and emissions from T-2005 must be routed to H-25. The second eductor was placed into service during this time to continue to route H₂S-containing gases to the incinerator. Once the second eductor was in service, the vent on T-2005 was closed.</p> <p>The sulfur tank vent was opened for approximately one hour on June 24, 2023, and closed as soon as the second eductor was put into service.</p>
The specific permit terms or conditions exceeded for this event include:

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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

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.

Event Date: June 29, 2023, and July 4-5, 2023		
Event Title: No. 2 Fluidized Catalytic Cracking Unit (No. 2 FCCU) Startup Exceedances		
Impacted Media (air, water, or soil): Air		
Operating Unit: Plant 2 No. 2 FCCU		
<p>Event Summary: Between June 29 and July 5, 2023, Plant 2 No. 2 FCCU underwent startup activities after a planned turnaround event. During the startup, opacity and carbon monoxide (CO) limits were exceeded at the No. 2 FCCU.</p> <p>On June 29, 2023, opacity spikes were observed during the startup of the No. 2 FCCU primary air blower. During the startup of the primary air blower, catalyst that was entrained in the unit from the planned shutdown was dislodged and released to the atmosphere. On July 4 and 5, 2023, opacity and carbon monoxide (CO) limits were exceeded as catalyst was loaded and torch oil was introduced to the unit as part of normal startup activities. These exceedances are typical during startup of the fluidized catalytic cracking units. Suncor operators followed protocols to minimize opacity and CO emissions.</p> <p>The event began at on June 29, 2023, and continued intermittently until July 5, 2023. The environmental exceedances related to startup stopped once the unit was operating and the process was stabilized.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>		
Permit Term or Condition	Maximum Reported Value	Event Duration
June 29, 2023		
Opacity not to exceed 20% at the No. 2 FCCU (6-minute average)	48% opacity (6-minute average)	0.9 hours
July 4-5, 2023		
Opacity not to exceed 20% at the No. 2 FCCU (6-minute average)	38% opacity (6-minute average)	3.4 hours
500 ppm CO (1-hour average)	1,030 ppm CO (1-hour average)	14 hours
500 ppm CO at 0% O ₂ (1-hour average)	1,974 ppm CO at 0% O ₂ (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>		

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Environmental Reportable Events Summary



Event Date: June 29, 2023	
Event Title: Plant 1 Tail Gas Unit (H-25) SO ₂ Exceedance	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 Sulfur Recovery Complex	
<p>Event Summary: On June 29, 2023, an afternoon hailstorm caused the Plant 1 main air compressor to trip, disrupting the sparger air supply to storage tank (T-2005) in the sulfur recovery complex. This led to a release of hydrogen sulfide (H₂S) from T-2005 to the Tail Gas Unit incinerator (H-25) until the air compressor was restarted. This resulted in an exceedance of the 250-ppm sulfur dioxide (SO₂) (corrected to 0% oxygen) 12-hour average limit from H-25. Operations personnel made operational changes to the TGU, including increasing the TGU reactor and regenerator temperatures, to reduce emissions.</p> <p>The H-25 SO₂ emission limit was exceeded from 4:00 p.m. to 10:00 p.m. on June 29, 2023. Emissions returned to normal levels once the Plant 1 main air compressor was restarted and the refinery's air supply was restored.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>	
Permit Term or Condition	Maximum Reported Value
250 ppm SO ₂ at 0% O ₂ (12-hour rolling average) from the tail gas unit incinerator (H-25)	260 ppm SO ₂ at 0% O ₂ (12-hr 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>	

Event Date: July 3, 2023	
Event Title: Plant 1 Sulfur Tank (T-2005) Vent to Atmosphere	
Impacted Media (air, water, or soil): Air	
Operating Unit: Plant 1 Sulfur Recovery Complex	
<p>Event Summary: On July 3, 2023, a leak was discovered in the line that moves gases from the sulfur tank (T-2005) at the Plant 1 sulfur recovery complex to the Tail Gas Unit incinerator (H-25). Suncor operators promptly responded to the incident and opened the vent to atmosphere on T-2005 to allow operations to isolate the leak and work to prevent pressure buildup inside the tank. Normally, the vent on T-2005 must remain closed and emissions from T-2005 must be routed to H-25.</p> <p>The sulfur tank vent was opened for thirteen hours on July 13, 2023, and closed as soon as the leak was repaired.</p> <p>The specific permit terms or conditions exceeded for this event include:</p>	
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

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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.

Event Date: July 12, 2023

Event Title: Diesel Line Leak

Impacted Media (air, water, or soil): Soil

Operating Unit: Plant 2 Oil Movements Division (OMD-2)

Event Summary:

On July 12, 2023, at approximately 6:00 a.m., a Suncor operator discovered stained soil and a pin-hole leak from an above-ground diesel line near truck Bay 1 in the Plant 2 south tank farm. The line was blocked upon discovery of the release, and a container was placed under the leak to collect the product until the line could be drained. It is estimated that approximately 5 barrels of diesel were released to soil. On July 13, 2023, hand excavation of impacted soil began due to limited access and overlying above ground piping the excavation. Following the soil removal, Suncor plans to treat the area with MicroBlaze Non-Formulated (MBNF) and perform soil sampling at least two weeks after MBNF application.

The leak remained within the containment area and did not reach any surface water or groundwater.

Event Date: July 14, 2023

Event Title: Hydrogen Plant Pressure Swing Adsorption (PSA) Unit Trip

Impacted Media (air, water, or soil): Air

Operating Unit: Plant 1 Main Plant Flare

Event Summary:

On July 14, 2023, the pressure swing adsorption (PSA) unit at the Hydrogen Plant tripped. When the PSA unit trips the flare suction valve on the Plant 1 main plant flare gas recovery system must be closed in order to redirect gases with elevated concentration of hydrogen sulfide (H₂S) to the Plant 1 Main Plant Flare. As a result, the Plant 1 Main Plant Flare gas H₂S limit was exceeded. Operators worked diligently to bring the PSA unit back online and restore the Hydrogen Plant's functionality. The issue was resolved once the PSA came back online. H₂S is combusted at the flare tip, which results in the generation of sulfur dioxide (SO₂) and water vapor. The Plant 1 Main Plant Flare gas H₂S limit was exceeded from 2:00 p.m. to 6:00 p.m. on July 14, 2023.

The specific permit terms or conditions exceeded for this event include:

Permit Term or Condition	Maximum Reported Value
162 ppm H ₂ S in flare gas (3-hr rolling average)	328 ppm H ₂ S in flare gas (3-hr rolling average)

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.

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