



On July 29, 2019, at approximately 1:00 PM, the plant lost all electrical power, which caused the dryer to vent to atmosphere and a loss of water flow to the fermentation scrubber. Once the utility could be reconnected, water flow to the scrubber was re-established at approximately 3:00 PM. The distillation process shut down with the power outage, and the distillation scrubber was put online prior to restarting the process. Excess emissions from this event are summarized below.

**Table 1 - Estimated Uncontrolled Dryer VOM/HAP Emissions  
 Plant Power Outage on July 29, 2019 at 1:00 PM**

When plant power was interrupted, the dryer emergency relief vent immediately opened to atmosphere. The dryer, dryer RTO, and all dryer fans lost power and stopped operating. Due to the lack of air flow through the dryer it took an extended period of time for the outlet dryer temperature to reach 130°F - the point at which VOM and HAP emissions are negligible. Due to the lack of air flow, excess emissions would have been minimal; however, for the purpose of this emission estimate we have calculated emissions as if this was a typical dryer shutdown with continuing air flow and a typical period of 90-minutes to reach an outlet temperature of 130°F resulting in a conservative estimate of actual emissions.

29-Jul-19 1:00 PM Parameter	Dryer By-Pass Uncontrolled Emissions	
	(lbs)	tons
Duration	90 min	
PM/PM10	1.95	0.001
CO	16.79	0.008
VOM	67.56	0.034
Total HAPs	4.60	0.002
Acetaldehyde	1.149	0.001
Acrolein	0.919	0.000
Formaldehyde	1.838	0.001
Methanol	0.689	0.000

Uncontrolled dryer VOM emissions based on May 2016 compliance testing.

**Table 2 - Estimated Uncontrolled Distillation Scrubber VOM/HAP Emissions  
 Plant Power Outage on July 29, 2019 at 1:00 PM**

The distillation process emissions were ducted to the dryer RTO at the time of this event. When power to the dryer RTO was lost, power was also lost to the distillation process, resulting in a lack of airflow, so there were no uncontrolled process emissions during this event. The scrubber water flow was established prior to restarting distillation process operations.

Compound	Uncontrolled Distillation Scrubber VOM Emissions August 2003 Test (lb/hr)	Uncontrolled Distillation Scrubber VOM Emissions 0.00 Hrs	
		(lbs)	(tons)
Acetaldehyde (HAP)	4.62	0.00	0.0000
Formaldehyde (HAP)	0.00	0.00	0.0000
Acrolein (HAP)	0.00	0.00	0.0000
Methanol (HAP)	0.06	0.00	0.0000
<b>Total HAPs</b>	<b>4.68</b>	<b>0.00</b>	<b>0.0000</b>
<b>Total VOM (MSF)</b>	<b>85.33</b>	<b>0.00</b>	<b>0.0000</b>



**Table 3 - Estimated Uncontrolled Fermentation VOM/HAP Emissions  
 Plant Power Outage on July 29, 2019 at 1:00 PM**

Water flow to the fermentation scrubber was lost at 1:00 PM. Water flow was re-established to the fermentation scrubber at 3:00 PM, resulting in a deviation time of 120 minutes. The estimate of uncontrolled emissions from this event is presented below.

Time 7/29/19 1:00 PM	Excess Emissions Duration (hrs)	Ferm. Tank #1		Ferm. Tank #2		Ferm Tank #3		Ferm Tank #4		Ferm Tank #5		Total VOM Uncontrolled (lbs)
		Tank Age (hrs)	VOM Uncontrolled (lbs)	Tank Age (hrs)	VOM Uncontrolled (lbs)	Tank Age (hrs)	VOM Uncontrolled (lbs)	Tank Age (hrs)	VOM Uncontrolled (lbs)	Tank Age (hrs)	VOM Uncontrolled (lbs)	
7/29/19 1 - 2 PM	1.00	12.00	186.78	Empty	-	57.00	28.88	42.00	113.89	27.00	171.11	500.7
7/29/19 2 - 3 PM	1.00	13.00	404.62	Empty	-	58.00	28.88	43.00	113.89	28.00	171.11	718.5
<b>Totals</b>	<b>2.00</b>											<b>1,219.16</b>

**Fermentation Process Emission Estimate**

Compound	Uncontrolled VOM Emissions by FTIR		Estimated Uncontrolled Fermentation Emissions	
	Low Flow Uncontrolled VOM <sup>a</sup> (lb/hr)	Percent of Total VOM by FTIR (%)		
			(lbs)	(tons)
Acetaldehyde	3.0000	0.8192%	9.9877	0.0050
Formaldehyde	0.3967	0.1083%	1.3206	0.0007
Acrolein	0.0000	0.0000%	0.0000	0.0000
Methanol	0.0200	0.0055%	0.0666	0.0000
Total HAPs			11.3749	0.0057
Total VOM (M25A)	366.20		1,219	0.61

a. Distribution of HAPs in VOM emissions based on uncontrolled emissions from August 2006 testing upstream of scrubber during low flow conditions.

**Table 4 - Estimated Total Uncontrolled VOM/HAP Emissions from Deviation Event  
 Plant Power Outage on July 29, 2019 at 1:00 PM**

Compound	Estimated Uncontrolled VOM / HAP Emissions from Event	
	(lbs)	(tons)
Acetaldehyde (HAP)	11.14	0.0056
Formaldehyde (HAP)	3.16	0.0016
Acrolein (HAP)	0.92	0.0005
Methanol (HAP)	0.76	0.0004
<b>Total HAPs</b>	<b>15.97</b>	<b>0.0080</b>
<b>Total VOM (MSF)</b>	<b>1,287</b>	<b>0.64</b>