

To: File  
From: John Legg  
Date: April 22, 2015

*John Legg*  
*4/22/15*

Subj: R13-2804A - Class II Administrative Update  
Nalco Company (Nalco)  
[formerly owned & operated by Champion Technologies Inc. (Champion)]  
Buckhannon Facility  
Plant ID No.: 097-00059; Permit No.: R13-2804A

Summary

Nalco recently bought out Champion, and will operate the existing specialty chemical distribution facility (Buckhannon) in Upshur County.

Operating as proposed under R13-2804A , Nalco estimates the facility's emissions rates to be:

<b>Table 1: Emission from Nalco's Buckhannon Facility.</b>						
<b>Pollutant</b>	<b>New R13-2804A</b>		<b>Old R13-2804</b>		<b>Delta (New - Old)</b>	
	<b>(lb/hr)</b>	<b>(ton/yr)</b>	<b>(lb/hr)</b>	<b>(ton/yr)</b>	<b>(lb/hr)</b>	<b>(ton/yr)</b>
PM	1.28	0.50	16.01	0.49	-14.73	-0.01
PM <sub>10</sub>	0.58	0.22	3.21	0.10	-2.63	+0.12
VOC	16.96	3.53	24.85	1.29	-7.9	+2.24
HAP	14.53	1.65	10.6	0.33	+3.93	+1.32

Application R13-2804A's Timeline

- February 2, 2015 - Nalco's legal notice ran in *The Record Delta*.  
(A copy of the notice was attached to Jeffrey Rude's March 2, 2015 email to the writer. Rude is a consultant for Reces Environmental Consulting who is working for Nalco.)
- February 10, 2015 - Nalco's Class II Administrative Update was submitted to the DAQ.
- February 20, 2015 - DAQ's Jennifer Rice emailed Emilio Ramos/Nalco an Application Status Letter stating that the company's legal ad had to be republished to indicate that the application was for a Class II Administrative Update.

- February 27, 2015 - Legal advertisement republished in *The Record Delta*.  
(Original Affidavit of Publication was received by DAQ on March 13, 2015.)
- March 2, 2015 - Jeffrey Rude, in an email, attaches Nalco's Change of Ownership forms.  
(A copy of the February 2, 2015 newspaper notice was also attached to the email.)
- March 9, 2015 - Jeffrey Rude, in an email, attaches a copy of the February 27, 2015 republished legal notice. (Also attached are Nalco's Change of Ownership forms.)
- March 13, 2015- Original Affidavit of Publication was received by DAQ for the republished February 27, 2015 newspaper notice.
- April 1, 2015 - Complete letter from the author sent to Nalco.  
(Time clock for the application started on March 13, 2015, the date DAQ received the original Affidavit of Publication for the republished February 27, 2015 newspaper notice.)
- April 16, 2015 - Draft permit sent to Company for comment.
- April 17, 2015 - Company approved draft permit. Draft permit submitted to the Air Director for signature.

### Process Description

The facility receives permit-approved products in tank trucks and also drums or totes. The products shipped in tank trucks are transferred to on-site storage tanks. The stored products can be sold to customers as is or blended with other permit-approved products and then sold to customers. The permit-approved products/blends include a variety of organic compounds for use in the oilfield industry.

All the facility's storage tanks in VOC service will have vertical fixed roofs. The facility uses the bottom-fill method during tank truck unloading to storage tanks to minimize emissions. The facility can transfer products from storage tanks and in drums or totes to the blend tank (T-5) for mixing new product formulations. The finished product may then be transferred to tank truck or tote/drum for transport offsite. To reduce vapor loss, all filling/loading operations use the submerged or bottom-filled method.

### Permit R13-2804

Nalco's currently operates under R13-2804. R13-2804 authorized the construction of ten (10) 6,300 gallon vertical fixed roof storage tanks, of which only seven (7) tanks were constructed.

Product types approved under R13-2804 for transfer to on-site storage tanks are:

- Bactron - Used to control bacteria in oil and natural gas industries.
- Gyptron - Used to control scale in the oil and natural gas industries.
- Scortron - Used to inhibit scale and corrosion in the oil and natural gas industries.
- Surfatron - A surfactant used in the oil and natural gas industries.

Permit Application R13-2808A

Nalco is proposing to:

- Replace one of the existing poly tanks with a stainless steel tank (6,014 gallon),
- Construct two new 6,014 gallon stainless steel storage tanks,
- Add the following new products formulations that can be stored on-site in the bulk storage tanks, blended with other approved products and shipped out to customers:

Assure® HI-18 (60-100% Methanol by weight)  
 Bactron ®K-87  
 Bactron® K-139  
 Bactron® K-176 and  
 Bactron® K0219 (30-60% Methanol by weight)

- Increase the facility's annual throughput of approved products and blends by a factor of 3.2, from 615,000 gal/yr to 1,950,000 gal/yr.

<b>Table 2: *Revised Emission Units Table for Nalco's Buchhannon Facility.</b>					
<b>Emission Unit ID</b>	<b>Emission Point ID</b>	<b>Emission Unit Description</b>	<b>Year Installed</b>	<b>Design Capacity</b>	<b>Control Device</b>
1S	T1	Storage Tank (Poly)	2009	6,300 GAL	None
2S	T2	Storage Tank (Poly)	2009	6,300 GAL	None
3S	T3	Storage Tank (Poly)	2009	6,300 GAL	None
4S	T4	Storage Tank (Poly)	2009	6,300 GAL	None
5S	T5	Storage Tank (Poly)	2009	6,300 GAL	None

<b>Table 2: *Revised Emission Units Table for Nalco's Buchhannon Facility.</b>					
<b>Emission Unit ID</b>	<b>Emission Point ID</b>	<b>Emission Unit Description</b>	<b>Year Installed</b>	<b>Design Capacity</b>	<b>Control Device</b>
6S	T6	Storage Tank (Stainless Steel)	2015	6,014 <del>6,300</del> GAL	None
7S	T7	Storage Tank (Stainless Steel)	2015	6,014 <del>6,300</del> GAL	None
8S	E-TK8	Storage Tank (Stainless Steel)	2015	6,014 <del>6,300</del> GAL	None
<del>TK9</del>	<del>E-TK9</del>	<del>Tank 9</del>	<del>FBD</del>	<del>6,300 GAL</del>	<del>N</del>
<del>TK10</del>	<del>E-TK10</del>	<del>Tank 10</del>	<del>FBD</del>	<del>6,300 GAL</del>	<del>N</del>
9S	LOAD1	Bulk Tank to Tote Transfers	2009	1,800 gal/hr	None
10S	LOAD2	Bulk Tank to Tank Truck Transfers	2009	4,800 gal/hr	None
* See Application R13-2804A, Attachment I.					

<b>Table 3: *Common Characteristics of New Storage Tanks 6, 7 and 8.</b>		
<b>Tank #</b>	<b>Variable</b>	<b>Response</b>
6, 7, & 8 New Construction	Type of Tank	Vertical Fixed Roof
	Material of Construction	Stainless Steel
	Design capacity (gallon)	6,014
	Internal Diameter (feet)	8
	Internal Height (feet)	16
	Max. Liquid Height (feet)	15
	Avg. Liquid Height (feet)	8
	Max. Vapor Space Height (feet)	15
	Avg. Vapor Space Height (feet)	8
	Tank Fill Method	- Submerged - Bottom Loading
* See Application R13-2804A, Attachment L, Emissions Unit Data Sheet Storage Tanks.		

<b>Table 4: *Flows for New Storage Tanks 6, 7 and 8.</b>			
<b>Planned Flows</b>	<b>Tank 6</b>	<b>Tank 7</b>	<b>Tank 8</b>
Max. Annual Throughput (gal/yr)	300,000	250,000	250,000
Max. Daily Throughput (gal/day)	20,000	20,000	20,000
Number of Turnover per year	53.2	44.3	44.3
Max. Tank Fill Rate (gal/min)	80	80	80

\* See Application R13-2804A, Attachment L, Emissions Unit Data Sheet Storage Tanks.

<b>Table 5: *Materials Stored in New Tanks 6, 7 and 8.</b>				
<b>Material Stored</b>		<b>Breathing</b>	<b>Working</b>	<b>Annual</b>
<b>Tank 6</b>				
Assure® Hi-18	Methanol (67-56-1)	0.019	326.49	492
	2-Butoxyethanol (111-76-2)	0.0002	3.30	4.96
<b>Tank 7</b>				
	Methanol (67-56-1)	0.0088	228.98	306
<b>Tank 8</b>				
	Methanol (67-56-1)	0.0088	228.98	306
Total				1,108.86

\* See Application R13-2804A, Attachment L, Emissions Unit Data Sheet Storage Tanks.

<b>Table 6: *Loading/Transfer Area Information</b>		
<b>Identification Number</b>	<b>9S</b>	<b>10S</b>
<b>Loading Area Name</b>	<b>Load1</b>	<b>Load2</b>
Bulk Tank to:	Tote or Drum	Tank Trucks
No. Of Pumps	2	2
Max. Number of Vessels Loaded at one time	1	1
Ballasting of Vessels Occurring?	Does Not Apply	Does Not Apply
Vessels Pressure Tested for Leaks	No	No

<b>Table 6: *Loading/Transfer Area Information</b>		
<b>Identification Number</b>	<b>9S</b>	<b>10S</b>
<b>Loading Area Name</b>	<b>Load1</b>	<b>Load2</b>
Number of hour per day operated	10	10
Number of day per week operated	6	6
Number of weeks per quarter operated	12	12
Liquid Loaded	Organic Chemicals	Organic Chemicals
Max. Daily throughput (gal/day)	2,670	2,670
Max. Annual throughput (gal/yr)	975,000	975,000
Loading Method	Bottom Fill Submerged Fill	Bottom Fill Submerged Fill
Max. Fill Rate (gal/min)	30	80
Max. Fill Rate (gal/hr)	1,800	4,800
Average Fill Time (min/loading)	11	100
Average gallons loaded	330	8,000
Max. Bulk Liquid Temperature (degree F)	95	95
True Vapor Press at max. bulk temperature (psia?)	3.5954	3.5954
Cargo Vessel Condition	Cleaned	Cleaned
Estimation Method	EPA	EPA
*See Application R13-2804A, Attachment L, Emissions Unit Data Sheet Bulk Liquid Transfer Operations.		

### Site Inspection

The writer did not visit Nalco's (formerly Champion's) Buckhannon facility for this Class II Administrative Update (R13-2087E). The facility, however, is routinely inspected by DAQ Enforcement.

A full on site inspections of the facility were conducted twice by John Money Penny on 11/20/14 and 6/13/12. No problems were noted during both inspections and the results code of 30: "In Compliance" was given to the facility both times.

When asked, John Money Penny was aware of the ownership change (from Champion to Nalco) and stated in an 4/1/15 email that personnel “are always very cooperative.”

Directions (per application, entry 12A, page 2 of 4):

- From the junction of Route 119 and Corridor H head Northeast on Corridor H East for 0.8 miles. Take the 1<sup>st</sup> left on Weatherford and in 0.2 miles the facility will be on the left.

Directions in previous evaluation R13-2804:

- To get to the facility take I-79 North to exit 99. Then take US 33 east approximately 13.1 miles. The entrance to the facility is an unmarked paved road on the left shortly before a water tower. Turn left on this road and the facility will be near the top of the hill on the right.

UTM coordinates (per application, page 2 of 4, entry 12.E, F, and G):

Northing	4,317.536	KM
Easting	567.717	KM
Zone	17 S	

Per Nalco’s legal advertisement, the latitude and longitude coordinates are:

39 degree 0' 15.20" North	39.00422 degrees North (latitude)
-80 degree 13' 4.56" East	-80.21793 degrees East (longitude)

### Regulatory Applicability

The facility is subject to the following state rules:

- 45CSR13 “Permits for Construction, Modification, Relocation, and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation”

The changes proposed under R13-2804A will increase annual PM<sub>10</sub>, VOC and HAP emissions by 0.12 ton/yr, 2.24 ton/yr and 1.32 ton/yr, respectively. Nalco submitted a permit application for a Class II Administrative Update and paid a permitting fee of \$300.00.

- 45CSR17 “To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage, and Other Sources of Particulate Matter”

The changes proposed under R13-2804A will increase fugitive PM<sub>10</sub> emissions by 0.12 ton/yr.

The haul roads are sources of fugitive particulate matter emissions and since the facility is not subject to 45CSR2, 3, 5 or 7 it is subject to 45CSR17. However, since all haul roads are paved, the facility meets the requirements of this rule.

**45CSR22 “Air Quality Management Fee Program”**

The facility is subject to 45CSR22 because it is not subject to 45CSR30.

The facility is not subject to:

- 40 CFR 60, NSPS, Subpart Kb because each tank is less than 75 cubic meters (19,813 gallons) in volume.
- 40 CFR 61, National Emission Standards for Hazardous Air Pollutants (NESHAP) because the facility is not a major source of HAP emissions.
- Prevention of Significant Deterioration (PSD) Permitting Requirements because Nalco will not be constructing any major sources or a major modification that has the potential to emit criteria pollutants in excess of the threshold values.

**Toxicity of Non-criteria Regulated Pollutants**

Methanol and Ethylene Glycol are the main HAPs that will be emitted by the facility. R13-2804A limits HAP emissions on a single HAP basis to ten (10) tons per year, or on a total aggregated HAP basis to 25 tons per year. Additionally, according to the engineering evaluation for R13-2804, very small amounts of formaldehyde may be emitted (less than 61 pounds per year will be processed through the facility).

<b>Table 7: *New Product MSDS's Submitted by Nalco in Application R13-2808A.</b>					
<b>MSDS</b>	<b>Ingredients</b>	<b>CAS No.</b>	<b>Weight %</b>	<b>HAP</b>	<b>Comments</b>
Assure® Hi-18	Methanol	67-56-1	60-100	Yes	Hydrate Inhibitor.
	2-Butoxyethanol	111-76-2	0.1 -1	No	
Bactron® K-87 Microbiocide	Glutaraldehyde	111-30-8	10-30	No	Biocide
	Alkyl dimethyl benzyl ammonium chloride (C12-8)	68391-01-59		No	

<b>Table 7: *New Product MSDS's Submitted by Nalco in Application R13-2808A.</b>					
<b>MSDS</b>	<b>Ingredients</b>	<b>CAS No.</b>	<b>Weight %</b>	<b>HAP</b>	<b>Comments</b>
	Alkyldimethyl (ethylbenzyl) ammonium chloride (C12-18)	68956-79-6	5-10	No	
	Alkylamine halide salt	Proprietary	1-5	No	
Bactron® K-139	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethy, chlorides	68424-85-1	10-30	No	Biocide
	Glutaraldehyde	111-30-8	5-10	No	
	Ethanol	64-17-5	1-5	No	
Bactron® K-176	Glutaraldehyde	111-30-8	10-30	No	Biocide
	1-Decanaminium, N-decyl-N, N-dimethyl-, chloride	7173-51-5	5-10	No	
	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethy, chlorides	68424-85-1	5-10	No	
	Ethanol	64-17-5	1-5	No	
Bactron® K-219	Methanol	67-56-1	30-60	Yes	Biocide
	Quaternary ammonium compounds, benzyl-C12-16-alkyldimethy, chlorides	68424-85-1	10-30	No	
	Glutaraldehyde	111-30-8	5-10	No	
Methanol	Methanol	67-56-1	60-100	Yes	Solvent

\*See Application R13-2804A, Attachment H, MSDS.

### Emissions Calculation

The writer reviewed Nalco's emission calculations found in permit application R13-2804A, Attachment N, and found them to be logical, complete, and accurate. An emissions summary table in provide above in the "Summary" section of this evaluation.

Table 8: Nalco's Buckhannon Facility Emissions Under R13-2804A.						
	PM		PM <sub>10</sub>		VOC	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Transfer of Approved Produce to Bulk Storage Tanks	--	--	--	--	9.34 <sup>(1)</sup>	2.29
Transfer from Bulk Storage to Tank Truck, Drum & Tote Filling	--	--	--	--	7.45 <sup>(2)</sup>	0.49
Equipment Leaks	--	--	--	--	0.17	0.76
Paved Haul Road	1.28	0.50	0.58	0.22	--	--
<b>Total</b>	<b>1.28</b>	<b>0.5</b>	<b>0.58</b>	<b>0.22</b>	<b>16.96</b>	<b>3.54</b>

(1) Calculated based on transferring the highest VOC-emitting approved product to only one bulk storage tank at a time. Multiple transfers of approved products to multiple bulk storage tanks at the same time could exceed the hourly VOC limit and is not allowed.

(2) Calculated based on transferring the highest VOC-emitting approved product/blend from bulk storage to drum/tote transfer (LOAD1) or tank truck transfer (LOAD2). Transfers made from bulk storage to both LOAD1 and LOAD2 at the same time could exceed the hourly VOC limit and is not allowed.

Emissions from Loading to Storage Tanks - Calculation Methodology

For each of its eight storage tanks (T1 through T8) Nalco determined an hourly and annual VOC emission rate based on the worst case/highest emitting produce that would be stored in each of the tanks. The highest hourly VOC emission rate of the eight storage tanks was used as the hourly VOC emission rate. This assumes that only one of the eight tanks is pumped/stored to at a time. The total annual VOC emission rate is the sum of all eight storage tanks' annual VOC emission rates.

Background Information

- The worst-case/highest emitting VOC products have the highest molecular weight and vapor pressure produce (MW x VP).
- Nalco used EPA Tanks 4.09d to calculate working and standing losses based on highest emitting VOC products stored in tanks.

Findings/Results are given below:

At a Total Annual Throughput (gal/yr)	1,950,000
Total Annual VOC Emissions (ton/yr) (Sum of All Eight Tanks Annual VOC Emissions)	2.23
Maximum Hourly VOC Emissions (lbs/hr) (Tank 1)	9.34

Emissions from Loading Product for Shipment - Calculation Methodology

Loading products to totes and tanker trucks results in VOC emissions from the displacement of vapors during the produce loading operation.

For each of the two loading racks (Load1 - Totes/Drums; Load2 - Tanker Trucks) Nalco determined an hourly and annual VOC emission rate based on the worst case/highest emitting produce that would be loaded at each loading rack. The highest hourly VOC emission rate of the two loading racks was used as the hourly VOC emission rate. This assumes that only one of two racks is loading produce at a time. The total annual VOC emission rate is the sum of both loading racks annual VOC emission rates.

Background Information

- The worst-case/highest emitting VOC products have the highest molecular weight and vapor pressure produce (MW x VP).
- Nalco used AP-42, Volume I, Fifth Edition – January 1995, Section 5.2, “Transportation and Marketing of Petroleum Liquids” to calculate the emission factors for loading products into bulk tank trucks.

Findings/Results are given below:

At a Total Annual Throughput for both loading racks (gal/yr)	1,950,000
Total Annual VOC Emissions (ton/yr) (Sum of Both Loading Racks' Annual VOC Emissions)	0.49
Maximum Hourly VOC Emissions (lbs/hr) (Loading Product Methanol from LOAD2 to Tanker Truck)	7.45

### T5 Blender Mixing Emissions - Calculation Methodology

See Attachment N for further information on these emissions. The author spoke to Nalco's consultant Jeffrey Rude about these emissions. Mr. Rude proved to the writer that the emissions were included in the "Site Emissions Summary Table" in Attachment N, i.e., that the emissions were included in the permit via the VOC emission limits for "Transfer of Approved Produce to Bulk Storage Tanks" in Table 4.1.3.

T-5 Blender Emissions, max. lb/hr	4.908
T-5 Blender Emissions, max. ton/yr	0.056

### Equipment Leaks

Fugitive emission losses are based on the facilities' equipment and piping component count estimates. The calculations use SOCFI without ethylene emission factors to estimate uncontrolled fugitive emissions. The annual emissions are based on each component being in service for 8,760 hours per year. The maximum hourly emissions are based on each component in service for one hour.

Total Emissions ton/yr	0.76
Total Emissions lb/hr	0.17