

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0573-AOP-R23 AFIN: 70-00040

1. PERMITTING AUTHORITY:

Division of Environmental Quality  
5301 Northshore Drive  
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

El Dorado Chemical Company  
4500 North West Avenue  
El Dorado, Arkansas 71730

3. PERMIT WRITER:

Shawn Hutchings

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Nitrogenous Fertilizer Manufacturing  
NAICS Code: 325311

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
8/16/2019	Modification	Emission corrections for a number of sources.

6. REVIEWER'S NOTES:

El Dorado Chemical Company (EDCC) owns and operates a chemical manufacturing facility located at 4500 North West Avenue in El Dorado, Arkansas. This permit is a PSD modification to change limits from a previous PSD project. The methane and GHG, emissions of SN-49; the VOC, methanol, methane, and CO<sub>2</sub>e emission limits for SN-50; the methane and CO<sub>2</sub>e emission limits for the SN-51; and the NO<sub>x</sub> and ammonia emissions limits for the SN-59 were increased. The minimum scrubber flow rate at SN-51 was updated. The limit of three hours per day for one stream feeding SN-53 removed. The Portable Cooling Tower was removed and a Prill Cooling

Tower was added to the Insignificant Activities list. Permitted emissions increased 10.5 tpy of VOC, 1300 tpy of CO<sub>2</sub>e, 17.15 tpy of Methanol, and 115.5 tpy of ammonia.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

The facility is currently under a CAO for failed stack tests. This permit is part of the resolution of that CAO.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? Y  
If yes, were GHG emission increases significant? Y

b) Is the facility categorized as a major source for PSD? Y

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes for 8(b), explain why this permit modification is not PSD.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-41	PM <sub>10</sub>	PSD
SN-49, SN-53, SN-54, SN-56, SN-57, & SN-61	SO <sub>2</sub> VOC CO NO <sub>x</sub> GHG Opacity	PSD
SN-50	VOC CO GHG	PSD
SN-51	VOC CO GHG	PSD
SN-59	NO <sub>x</sub> GHG Opacity	PSD
SN-61	NO <sub>x</sub>	40 CFR Part 60, Subpart Db
SN-13	NO <sub>x</sub>	40 CFR Part 60, Subpart G
SN-59	NO <sub>x</sub>	40 CFR Part 60, Subpart Ga
SN-07	SO <sub>2</sub> and sulfuric acid mist	40 CFR Part 60, Subpart H

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
SN-65, 66, 68, 69, 70, 71, 72	There are no specific emission limits or pollutants identified, but the rules generally regulate HAPs	40 CFR Part 63, Subpart ZZZZ
SN-48, SN49, SN-54, & SN-61		40 CFR Part 63, Subpart DDDDD
SN-25		40 CFR Part 63, Subpart CCCCC
SN-65	CO, PM, NMHC + NO <sub>x</sub>	40 CFR Part 60, Subpart IIII
SN-66, 68, 69, 70, 71, 72	CO, VOC, NO <sub>x</sub>	40 CFR Part 60, Subpart JJJJ

10. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? N

(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any Regulation 18 requirement.)

If yes, are applicable requirements included and specifically identified in the permit? N  
If not, explain why.

11. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

12. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the ADEQ Air Permit Screening Modeling Instructions.

PSD modeling is performed in two stages: the significance analysis and the full impact analysis. The significance analysis considers the net emissions change associated with PSD affected emissions units to determine if the increased emissions will have a significant impact upon the surrounding area. If the results of the significance analysis are below the corresponding Modeling Significance Levels, the full impact analysis is not required. The facility used Tier-1 Screening of Ozone impacts using MERPS. The results for ozone SIL below represent the calculated cumulative consumption of the ozone SIL. A summary of the results of the significance analysis is in the table below.

Pollutant	Averaging Period	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Significance Level ( $\mu\text{g}/\text{m}^3$ )
CO	1 – hour	1,046	2,000
	8 – hour	341	500
Ozone	8-hour	0.01 ppb	1 ppb

b) Non-Criteria Pollutants:

1<sup>st</sup> Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value ( $\text{mg}/\text{m}^3$ ), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV ( $\text{mg}/\text{m}^3$ )	PAER (lb/hr) = $0.11 \times \text{TLV}$	Proposed lb/hr	Pass?
Ammonia	17.4	1.9	1744	No

2<sup>nd</sup> Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ( $\mu\text{g}/\text{m}^3$ ) = 1/100 of Threshold Limit Value	Modeled Concentration ( $\mu\text{g}/\text{m}^3$ )	Pass?
Ammonia	174	104.5	Y

c) H<sub>2</sub>S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H<sub>2</sub>S Standards

Y/N

If exempt, explain: \_\_\_\_\_

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H <sub>2</sub> S	20 parts per million (5-minute average*)		
	80 parts per billion (8-hour average) residential area		
	100 parts per billion (8-hour average) nonresidential area		

\*To determine the 5-minute average use the following equation

$$C_p = C_m (t_m/t_p)^{0.2} \text{ where}$$

C<sub>p</sub> = 5-minute average concentration

C<sub>m</sub> = 1-hour average concentration

t<sub>m</sub> = 60 minutes

t<sub>p</sub> = 5 minutes

13. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
05A and B	Vendor Specification	PM <sub>10</sub> – 0.085 mg/acf	Brinks Scrubber	-	-
	Engineering Estimate	0.8 lb/hr NH <sub>3</sub>	Brinks Scrubber	99.5%	-
07	NSPS limit	SO <sub>2</sub> – 92.0 lb/hr	Brinks Mist Eliminator	-	Remain the previous permitted limit
	Testing	H <sub>2</sub> SO <sub>4</sub> – 0.123 lb/ton	Brinks Mist Eliminator	-	-
10	AP-42	NO <sub>x</sub> - 10.0 lb/ton	best operation	-	-
	Highest lb/hr from Stack Test results of 2001-	HNO <sub>3</sub> – 0.389 x 1.25 x 40/8.5 = 2.3 lb/hr +1.1	-	-	Maximum nitric acid production rate is 8.5 tons/hr, and maximum

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	2004	lb/hr from car barn NO <sub>x</sub> - 3.3 x 1.25 x 40/8.5 = 19.5 lb/hr			nitric acid blend production is 40 tons/hr. Stack test + 25% safety factor.
13	NSPS	3.0 lb/ton of acid	refrigerated absorption	-	-
18	Process Knowledge	PM <sub>10</sub> – 0.033 lb/ton	Baghouse	-	-
19	PM – 50,556 scfm x 011677 lb/mmft <sup>3</sup> x 60 min/hr x 1.2  NH <sub>3</sub> - 50,556 scfm x 25 ppm x 17.1 lb/lb-mol x lb-mol/385.2 ft <sup>3</sup> 60min/hr x 1.2	-	-	-	
25	TANKS 4.0.9	VOC	none	-	-
26	TANKS 4.0.9	NH <sub>3</sub>	none	-	-
27	Testing	PM 4.8E-7 lb/ton	none	-	-
28	Testing	PM 4.8E-7 lb/ton	none	-	-
30	AP-42 Section 5.2	H <sub>2</sub> SO <sub>4</sub> – 0.0034 lb/1000 gallons	none	-	-
31	SOCMI	NH <sub>3</sub> – 0.5 lb/hr	none	-	-
32	SOCMI	NH <sub>3</sub> – 1.6 lb/hr	none	-	-
33	Process Knowledge	NO <sub>x</sub> – 0.1 lb/hr	none	-	-
	Process Knowledge	HNO <sub>3</sub> – 0.1 lb/hr	none	-	-

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
34	Process Knowledge	PM <sub>10</sub> – 0.7 lb/ton x 1.46 ton/hr	none	-	-
35A	Testing	PM <sub>10</sub> – 0.1 lb/hr	baghouse	99%	-
35B	AP-42	PM 19.7 lb/hr	none		
38	$EF_{PM} = \text{Total liquid drift (lb/1000 gal)} \times \text{TDS Fraction (ppm)}$ $= 0.0834 \text{ lb/1000 gal} \times 1,560 \text{ ppm}$ $PM_{10} = EF_{PM} \times \text{flowrate}$ $= 9,000 \text{ gpm} \times EF_{PM}$			-	
40	TANKS Program	NH <sub>3</sub> – 0.22lb/hr			-
41	Stack testing	NH <sub>3</sub> – 10.0 lb/hr PM/PM10 – 4 lb/hr	Chemical steam scrubber	-	24-hr BACT limit is 13.8 lb/hr 30-day rolling BACT limit is 3.4 lb/hr
44	Mass Balance for sulfur oxides and sulfuric acid.  Stack test from similar plant plus a safety factor of 25%.	Scrubber	-	-	
46	0.00013 lb/1000 gal	-	-	0.001% is design drift loss percent provided by manufacturer.	
13	NSPS  EPA/DOJ	NO <sub>2</sub> (3-hr): 3.0 lb/ton  NO <sub>2</sub> (3-hr):	SCR	95%	After installation of SCR and Tail gas preheater

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
	Vendor Info	1.0 lb/ton (excluding SSM) NO <sub>2</sub> (rolling 365-days): 0.6 lb/ton  NH <sub>3</sub> : 20 ppm			
65 66, 68, 69, 70, 71, 72	AP-42 or NSPS	varied	none	--	
67	AP-42	0.02 lb/ton	None		
14 and 21	Vendor Specification	0.085 mg/acf PM	Scrubber	99.5 for ammonia	
59	BACT limits Testing	Varied	SCR and Tertiary abator		

14. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
10	NO <sub>x</sub>	7E	Every five years	Necessary for efficiency check on Venturi & Packed Tower Scrubber
10	HNO <sub>3</sub>	Approved method	Every five years	Necessary for efficiency check on Venturi & Packed Tower Scrubber



SN	Pollutants	Test Method	Test Interval	Justification
07	SO <sub>2</sub>	6C	Initial performance test	NSPS Requirement
05A and B	PM <sub>10</sub>	Approved method	Initial and alternating annually.	Necessary to prove that PSD has not been triggered.
14, & 21	PM, PM <sub>10</sub> , PM <sub>2.5</sub>	Method 5 or 201A, and 202	Annually until 2 consecutive passes, then once every 5 years	Necessary to prove that PSD has not been triggered.
21	NH <sub>3</sub>	Approved method	Annually until 3 consecutive passes, then once every 3 years	Necessary to prove adherence to the non-criteria pollutant strategy.
44	SO <sub>3</sub> NO <sub>x</sub> H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub>	Approved method	Every five years	Necessary to prove adherence to the non-criteria pollutant strategy.
59	NH <sub>3</sub>	CTM-027 or equivalent	Annually until 2 consecutive passes, then once every 5 years	Necessary to prove adherence to the non-criteria pollutant strategy.
49	PM PM <sub>10</sub> PM <sub>2.5</sub> SO <sub>2</sub> VOC CH <sub>4</sub> CO CO <sub>2</sub> N <sub>2</sub> O	Method 5 & 202 Method 201A & Method 202 Method 6C Method 25A Method 18 Method 10 Method 3A Method 320, ASTM D6348-03 or other approved method	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
50	VOC	25A	One Time Test	Verify emissions

SN	Pollutants	Test Method	Test Interval	Justification
	CO <sub>2</sub>	3A		
50	Methanol	18 or 25A	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
51	VOC Pre and Post Control CO NH <sub>3</sub>	25A 10 320	One Time Test	Verify emissions
51	Methanol CO <sub>2</sub>	18 or 25A 3A	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
61	PM PM <sub>10</sub> PM <sub>2.5</sub> SO <sub>2</sub> VOC CO NO <sub>x</sub>	Method 5 & 202 Method 201A & Method 202 6C 25A 10 7E	Annually until 2 consecutive passes, then once every 5 years	Verify emissions
13	NH <sub>3</sub>	CTM-027 or equivalent	Annually until 2 consecutive passes, then once every 5 years	Necessary to prove adherence to the non-criteria pollutant strategy.

## 15. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
13	NO <sub>x</sub>	CEM	Continuously	Y
07	SO <sub>2</sub> emission rate	CEM	Continuously	Y
41 and 63	Ammonia and particulate emission rates	Daily sampling consisting of two 12-hour composite sample	Continuously	Y
59	NO <sub>x</sub> and N <sub>2</sub> O	CEM	Continuously	Y

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
49	NO <sub>x</sub>	CEM	Continuously	Y

#### 16. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
13	weak nitric acid production	140,000 tons/12 months	Monthly	Y
38, 46, 52, 60	Total Dissolve solid	1,560 ppm	Weekly	N
59	weak nitric acid production	461,725 tons/12 months	Monthly	Y
47	strong nitric acid production	5.2 tons per hour	Hourly	Y
47	strong nitric acid production	45,625 tons/12 months	Monthly	Y
10	Scrubber parameter	hydrogen peroxide concentration	Daily	N
07	Sulfuric acid production	200,750 ton/12 months	Monthly	Y
	Sulfuric acid production	550 tons of 100% sulfuric acid per day	Daily	Y
	Sulfuric acid emission limit	4.0 lb of SO <sub>2</sub> per ton of acid production, expressed as 100% H <sub>2</sub> SO <sub>4</sub> , and based on a 3-hr average.	Continuously and averaged every 3-hours	N
	Annual SO <sub>2</sub> Emissions (tpy on a calendar basis)	N/A	Annually	N
30	Sulfuric acid shipped	200,750 tons/12 months	Monthly	Y
All E2 Plant	Production	525,600 tons/12 months	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
05A and B	Scrubber liquid flow rate for each scrubber Gas pressure drop across unit Scrubber liquid pH	225 gal/min (minimum) 2.5 in. H <sub>2</sub> O (minimum) 0.5 – 6.0	Daily	N
41	BACT Limit PM	24-hour Average 0.223 lb/ton	Daily	Y
		30-day Average 0.054 lb/ton	Monthly	Y
All KT plant	Production	394,200 tons/12 months	Monthly	Y
14	Scrubber liquid flow rate Gas Pressure Drop Across Unit pH Exhaust Flow Rate	225 gal/min (minimum) 2.5 in H <sub>2</sub> O (minimum) 0.5 – 6.0 131,452 acfm (maximum)	Daily	N
18	Baghouse Pressure Drop	0.5 – 8.0 in H <sub>2</sub> O	Daily	N
21	Scrubber liquid flow rate Gas Pressure Drop Across Unit pH Exhaust Flow Rate	225 gal/min (minimum) 2.5 in H <sub>2</sub> O (minimum) 0.5 – 6.0 131,452 acfm (maximum)	Daily	N
63	PM emissions	24-hour Average 0.223 lb/ton	Daily	Y
		30-day Average 0.054 lb/ton	Monthly	Y
	AN Production	547,500 tons/12 months	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
49	NH <sub>3</sub> production	565,750 tons/12 months	Monthly	Y
	Natural gas usage	7,076.7 MMscf per 12 months	Monthly	Y
53	Natural gas usage	9.0 MMscf per 12 months	Monthly	Y
	Hours of operation	three (3) hours during any consecutive 24-hour period, in the event of an emergency venting scenario. During normal process gas flaring or unless operation is during a maintenance outage of the hydrogen recovery unit (HRU), in which case, the daily time restriction does not apply. In excess of 1,050 hours annually.	Daily	Y
51	Scrubber parameters	30 gpm 2 in H <sub>2</sub> O	Daily	N
56	Natural gas usage	8.2 MMscf per 12 months	Monthly	Y
57	Natural gas usage	1.5 MMscf per 12 months	Monthly	Y
54	Natural gas usage	18.63 MMscf per 12 months	Monthly	Y
53, 56, 57	Flare maintenance	No limit	As required	Y
44	Amount of Oleum offload into the storage tank Percent strength	394,000 tons  30% 219,000 tons	Monthly	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
	of the Oleum Amount of mixed acid produced.			
44	Scrubber liquid flow rate for each scrubber Gas pressure drop across unit Scrubber liquid pH	5.0 gal/min (minimum) 10 – 35 in. H <sub>2</sub> O 0.5 – 7.5	Daily	N
25	usage of gasoline	40,000 gallons/12 months	Monthly	Y
29	Nitric Acid Shipped	250,000 tons/12 months	Monthly	Y
40	AN Loading tonnage	65,000,000 tons/12 months	Monthly	Y
58	Ammonia Loading	226,300 tons/12 months	Monthly	Y
65 and 66 68, 69, 70, 71, 72	Hours of operation	100 hours per calendar year 500 hours	Monthly	Y
65 and 66	Engine maintenance	Change oil and filter every 500 hours of operation, or annually, whichever comes first; Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; and Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace	As needed	N

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		as necessary.		
67	Prills Unloaded	36,500 tons per 12 months	Monthly	Y
61	NSPS Db records	No specific limits	Monthly	Y

17. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
07 & 13	10%	NSPS limit	Daily Observation
54, 61	0%	BACT limit	Natural Gas Combustion
49, 59	0%	BACT limit	Daily Observation
53, 56, 57	0%	BACT limit	Natural Gas Combustion
05A and B, 18, 35A, 41, 47, 63	5%	Department Guidance	Weekly Observation
52, 60	5%	Department Guidance	Weekly TDS
21, 27, 28	10%	Department Guidance	Daily Observation
14, 19	15%	Department Guidance	Daily Observation
34, 44	20%	Previous permit	Daily Observation
10, 38, 46	20%	Department Guidance	Weekly TDS
35B & 67	20%	Department Guidance	-
65	20%	Department Guidance	Annual Observation
66	5%	Department Guidance	Annual Observation
68, 69, 70, 71, 72	5%	Department Guidance	Natural gas or propane combustion

18. DELETED CONDITIONS:

Former SC	Justification for removal
No conditions were removed.	

19. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

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Source Name	Group A	Emissions (tpy)
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Permit #: 0573-AOP-R23

AFIN: 70-00040

Page 17 of 17

20. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0573-AOP-R22



## APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

## Fee Calculation for Major Source

Revised 03-11-16

El Dorado Chemical Company  
 Permit #: 0573-AOP-R23  
 AFIN: 70-00040

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	<u>1661.04</u>
Permit Type	Modification	Permit Fee \$	<u>2057.98</u>

Minor Modification Fee \$	500
Minimum Modification Fee \$	1000
Renewal with Minor Modification \$	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	<input type="checkbox"/>
If Hold Active Permit, Amt of Last Annual Air Permit Invoice \$	0
Total Permit Fee Chargeable Emissions (tpy)	86
Initial Title V Permit Fee Chargeable Emissions (tpy)	

*HAPs not included in VOC or PM:*

*Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

*Air Contaminants:*

*All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensable PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		122.6	122.6	0	0	122.6
PM <sub>10</sub>		102.2	102.2	0		
PM <sub>2.5</sub>		95.7	95.7	0		
SO <sub>2</sub>		403.9	403.9	0	0	403.9
VOC		40.8	51.3	10.5	10.5	51.3
CO		163.8	163.8	0		
NO <sub>x</sub>		320.8	274.6	-46.2	-46.2	274.6
CO <sub>2</sub> e	<input type="checkbox"/>	1293490	1294790	1300		

















