

To: File
From: John Legg
Date: 04/15/16

John Legg
4/15/16

Subj: Class I Administrative Update to R13-2098B
Replacement of Reactor (10-RX-01) with Reactors (10-RX-02 and 10-RX-03)
Tetra Technologies, Inc., Parkersburg Facility
Permit No.: R13-2098C; Plant ID No.: 107-00113

SUMMARY

On March 18, 2016, Tetra Technologies, Inc. (Tetra) submitted a Class I Administrative Update (R13-2098C) for their Parkersburg, Wood County, WV facility to replace a limestone fill tank/Reactor (10-RX-01) with two smaller reactors (10-RX-02 and 10-RX-03).

On March 21, 2016, the writer was assigned as the reviewing engineer. A completeness email was issued to the company on 3/25/16 stating that the application was deemed complete as of March 21, 2016 and that the resulting permit was due on May 25, 2016. (No legal advertisement was required because the application is as class I administrative update.)

The two new reactors will be made of the same material (high density polyethylene) as the older reactor and will be installed in the same location. The feed rates for limestone and HCl and the production rates for CaCl_2 will remain the same.

Emissions (CO_2) from the process will remain the same because the process/production rate and control of the source (by scrubber 10-SR-01 through emission point VS-01) will remain the same.

PROCESS DISCUSSION

The following discussion was taken from Attachment G of the permit application:

Tetra produces calcium chloride (CaCl_2) at their facility located at 401 Buckeye St., Parkersburg, West Virginia. The plant uses hydrochloric acid (HCl) and neutralizes it by reaction with limestone (CaCO_3) to produce calcium chloride brine (CaCl_2 and H_2O) and carbon dioxide (CO_2) gas. The reaction occurs in the Reactor (10-RX-01) which is basically a limestone filled tank. The reactor is continually fed limestone and HCl and the process runs in a continual basis as long as HCl is fed to the reactor. To stop the reaction, the feed of HCl ceases and the production ceases. Limestone will still be in the reactor at this point. To restart the production, the facility only has to restart the feed of HCl.

There is an upcoming planned maintenance outage at Tetra's HCl supplier. During this outage acid will not be produced/available for delivery for a several week period. Tetra is proposing to take advantage of this outage to replace the existing reactor (10-RX-01) with two new reactors (10-RX-02 and 10-RX-03):

The project will replace the existing single 14' diameter by 30' tall reactor (10-RX-01) with two new 5' - 3" diameter by 30' tall vertical reactors (10-RX-02 and 10-RX-03). The new reactors will be constructed from High Density Polyethylene (HDPE) P-100 material. The shell thickness is 1.94" with the top and bottom plate constructed from HDPE P100, 2" thick. Design pressures from these reactors range from a -15 water column vacuum to 10 psig. The reactors will be operated at atmospheric pressure. Both units will have fixed roofs.

The reactor replacement is the only change proposed under this update. The existing reactor will be removed and the replacement reactors will be installed within the same footprint as the existing reactor and fed from the same existing limestone feed conveyor/hopper. Hydrochloric acid (HCl) will be supplied from the same existing pump and piping systems.

The process rate (feed rates for limestone and HCl and the production rates for CaCl_2) will remain the same. Information on the existing and replacement reactors is provided in Attachment L to the permit application.

Emissions from the process will remain the same since the process feed rate and control device (scrubber 10-SR-01) will remain the same. The resulting emission from the process is carbon dioxide (CO_2). The existing reactor vents to a scrubber (10-SR-01) which in turn vents to the atmosphere through emission point VS-01. The new reactors will be vented to the same scrubber which will not require revisions/modifications.

CO_2 is not controlled by the scrubber (10-SR-01). The scrubber controls multiple sources and the main design of the scrubber is to remove HCl mist. The amount of CO_2 produced/emitted from the reactors (6.14 ton/hr and 53,800 ton/yr) is based on the chemical reaction and estimation provided in Attachment N.

Identification Number		10-RX-02 (Right tank) 10-RX-03 (Left tank)
Type of Operation		Continuous
Operating Schedule		365 days per year
Feed Data (both reactors)	Limestone (CaCO_3)	solid; 353 ton/day; 128,815 ton/yr
	36% HCl	liquid; 144,000 gal/day; 52,560,000 gal/yr

Table 1: Reactor Data Sheet for Replacement Reactors (10-RX-02 and 10-RX-03)		
Identification Number		10-RX-02 (Right tank) 10-RX-03 (Left tank)
Chemical Reaction		$2\text{HCl} + \text{CaCO}_3 \text{ ----> Ca Cl}_2 + \text{H}_2\text{O} + \text{CO}_2$
Output Data (both reactors)	CaCl ₂ (48.8%)	liquid; 152,844 gal/day; 55,788,000 gal/yr
	CO ₂	gas; 6.14 ton/hr; 53,809 ton/yr
Reactor Information		Vessel Capacity: 4,300 gallons (each) Tank Design: 0 - 150 degree F Atmospheric Pressure Fabricated by: Plastek Werks, 196 Industrial Blvd, Cleveland, GA 30528 (706) 348-8286 Blueprints provided in application (At the end of Attachment L)

CHANGES MADE TO PERMIT R13-2098B

Attachment A to this evaluation contains a word-perfect file comparison comparing the resulting permit (R13-2098C) to permit R13-2098B.

REGULATORY APPLICABILITY

The replacement reactors (10-RX-02 and 10-RX-03) do not change the regulatory applicability of the site, i.e., no new regulations apply to the facility because of the change.

Tetra's Parkersburg Facility is view as a minor source and is not subject to Title V. The following Federal and State rules apply:

Federal: No specific federal regulation(s) are applicable to this facility.

WV: 45CSR7 To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

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

~~45CSR17 To Prevent and Control Particulate Air Pollution from Materials Handling, Preparation, Storage and Sources of Fugitive Particulate Matter~~

Note: When the original permit (R13-2098) was approved (June 10, 1997), rule 17 applied. It also applied to the updated permit (R13-2098A) approved August 10, 2000). Rule 17 has since been revised (on August 31, 2000) and because of this, rule 17 not longer applies (because Rule 7 applies). The rule 17 stuff was removed in this update (R13-2098B).

45CSR22 Air Quality Management Fee Program

Attachment A

File Comparison Generated by Wordperfect

Compare

R13-2098C to R13-2098B

Tetra Technologies, Inc.'s Parkersburg, WV Facility

WordPerfect Document Compare Summary

Original document:

Q:\AIR_QUALITY\J_LEGG\TETRA\2098B\107-00113_PERM_13-2098B.wpd

Revised document:

Q:\AIR_QUALITY\J_LEGG\TETRA\2098C\107-00113_PERM_13-2098C.wpd

Deletions are shown with the following attributes and color:

~~Strikeout~~, **Blue** RGB(0,0,255).

Deleted text is shown as full text.

Insertions are shown with the following attributes and color:

Double Underline, Redline, **Red** RGB(255,0,0).

The document was marked with 27 Deletions, 22 Insertions, 0 Moves.



WEST VIRGINIA DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY

EARL RAY TOMBLIN
GOVERNOR

RANDY C. HUFFMAN
CABINET SECRETARY

WILLIAM F. DURHAM, DEPUTY DIRECTOR

PERMIT TO UPDATE
A LIQUID CALCIUM CHLORIDE PRODUCTION PLANT

IN ACCORDANCE WITH THE WEST VIRGINIA AIR POLLUTION CONTROL LAW (W. Va. Code §§22-5-1 et seq.), AND REGULATIONS PROMULGATED THEREUNDER, THE FOLLOWING PERMITTEE IS AUTHORIZED TO CONSTRUCT, SUBJECT TO THE TERMS AND CONDITIONS OF THIS PERMIT, THE SOURCE DESCRIBED BELOW.

This administrative update, R13-2098C, supercedes R13-2098B which was approved on March 27, 2014. Administrative update R13-2098B, supercedes R13-2098A which was approved on August 10, 2000. Administrative update R13-2098A superceded R13-2098 which was approved June 10, 1997. There were no existing permits in effect for this facility before R13-2098.

Name of Permittee: Tetra Technologies, Inc.

Name of Facility: Parkersburg Facility

Permit No.: R13-2098BC

Plant ID No.: 107-00113

Effective Date of Permit: ~~March 27~~April 15, 2014~~6~~

Permit Writer: John Legg (R13-2098A-~~&~~ B and C);
Jay Fedczak (R13-2098)

Facility Mailing Address: 400 Buckeye Street
Parkersburg, WV 26101

County: Wood County

Nearest City or Town: Parkersburg, WV

UTM Coordinates: Easting: 453.7 km Northing: 4545.1 km Zone: 17

Directions to Exact Location: From WV State Route 14 North in Parkersburg, go east onto Camden Avenue, then north onto Buckeye Street to railroad tracks. Take gravel drive east along tracks. Site is on the left.

Type of Facility or Modification: Liquid calcium chloride production plant (38.5% CaCl₂ by weight).
R13-2098C - Documents the replacement of limestone filled tank/Reactor 10-RX-01 with Reactors 10-RX-02 and 10-RX-03.
R13-2098B - Documents the replacement of limestone filled tank/Reactor (10-RX-01).
R13-2098A - Allows permitted CaCl₂ production to increase on an anhydrous basis from 15,210 lb/hr to 32,135 lb/hr and from 66,605 TPY to 140,750 TPY.

IN ACCORDANCE WITH THE PERMIT APPLICATION AND ITS AMENDMENTS, THIS PERMIT IS LIMITED AS FOLLOWS:

A. SPECIFIC REQUIREMENTS

- 0.5. ~~A~~Two (2) polyethylene-constructed ~~reactor~~reactors (10-RX-02 and 10-RX-03) shall replace the ~~older/original fiberglass~~older polyethylene-constructed reactor known as Reactor (10-RX-01). The ~~older/original~~older reactor shall be removed from service and the replacement reactors shall be installed at the same location as the ~~older/original~~older reactor.
1. Calcium chloride production (38.5% CaCl₂ by weight) shall be limited on an anhydrous basis to 32,135 lb/hr (based on an average daily rate) and 140,750 ton/yr (based on a 12-month rolling total).
2. Particulate Matter (PM) emissions from the Lime Silo Bag House (20-DC-01; Emission Point ID No. PM-02) shall not exceed 0.44 lb/hr and 220.0 lb/yr (based on a hydrated lime powder loading rate of 20 ton/hr and 10,069 ton/yr).
3. The concentration of hydrochloric acid emitted from the Vent Scrubber (10-SR-01; Emission Point VS-01) shall not exceed 62 milligrams per dry standard cubic meter (62 mg/dscm). Compliance with the hydrochloric acid concentration limit given here shall demonstrate compliance with the less stringent hydrochloric acid concentration limit of 45CSR§7-2.1.
4. A water and/or liquid calcium chloride truck with manufactured, pressurized spray nozzles shall be utilized to control fugitive dust from access roads, areas where mobile equipment is working, and parking areas.

B. OTHER REQUIREMENTS

1. The permitted facility shall comply with the following requirements pertaining to the utilization of a water truck to control fugitive dust generated from vehicle traffic or mobile equipment emissions. Compliance with any more stringent limitation set forth under Paragraph A. SPECIFIC REQUIREMENTS of this permit shall also be demonstrated. The standard requirements pertaining to the utilization of a water truck are as follows:

The permittee shall maintain a water truck on site and in good operating condition, and shall utilize the same to apply water, or a mixture of water and an environmentally acceptable dust control additive, hereinafter referred to as solution, as often as is necessary in order to minimize the atmospheric entrainment of fugitive particulate emissions that may be generated from haulroads and work areas where mobile equipment is used.

The spraybar shall be equipped with commercially available spray nozzles, of sufficient size and number, so as to provide adequate coverage to the area being treated.

R13-2098C
Tetra Technologies, Inc.
Parkersburg, Wood County, WV

The pump delivering the water, or solution, shall be of sufficient size and capacity so as to be capable of delivering to the spray nozzle(s) an adequate quantity of water, or solution, and at a sufficient pressure, so as to assure that the treatment process will minimize the atmospheric entrainment of fugitive particulate emissions generated from the haulroads and work areas where mobile equipment is used.

3. The permitted facility shall comply with all applicable requirements of 45CSR7 and any more stringent requirements as may be set forth under SPECIFIC REQUIREMENTS (A).
4. The principal provisions of 45CSR7 applicable to this permitted facility are as follows:

§45-7-2.1

Mineral acids shall not be released from any type source operation or duplicate source operation or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity given in Table 45-7B found at the end of this rule.

§45-7-3.1

No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any process source operation which is greater than twenty (20) percent opacity, except as noted in subsections 3.2, 3.3, 3.4, 3.5, 3.6, and 3.7.

§45-7-3.7

No person shall cause, suffer, allow or permit visible emissions from any storage structure(s) associated with any manufacturing process(es) that pursuant to subsection 5.1 is required to have a full enclosure and be equipped with a particulate matter control device.

§45-7-4.1

No person shall cause, suffer, allow, or permit particulate matter to be vented into the open air from any type source operation or duplicate source operation, or from all air pollution control equipment installed on any type source operation or duplicate source operation in excess of the quantity specified under the appropriate source operation type in Table 45-7A found at the end of this rule.

§45-7-5.1

No person shall cause, suffer, allow or permit any manufacturing process or storage structure generating fugitive particulate matter to operate that is not equipped with a system, which may include, but not be limited to, process equipment design, control equipment design or operation and maintenance procedures, to minimize the emissions of fugitive particulate matter. To minimize means such system shall be installed, maintained and operated to ensure the lowest fugitive particulate matter emissions reasonably achievable.

§45-7-8.1

At such reasonable times as the Director may designate, the operator of any manufacturing process source operation may be required to conduct or have conducted stack tests to determine the particulate matter loading in exhaust gases. Such tests shall be conducted in such manner as the Director may specify and be filed on forms and in a manner acceptable to the Director. The Director, or his duly authorized representative, may at his option witness or conduct such stack tests. Should the Director exercise his option to conduct such tests, the operator will provide all the necessary sampling connections and sampling ports to be located in such manner as the Director may require, power for test equipment and the required safety equipment such as scaffolding, railings and ladders to comply with generally accepted good safety practices.

§45-7-8.2

The Director, or his duly authorized representative, may conduct such other tests as he or she may deem necessary to evaluate air pollution emissions.

§45-7-9.1

Due to unavoidable malfunction of equipment, emissions exceeding those set forth in this rule may be permitted by the Director for periods not to exceed ten (10) days upon specific application to the Director. Such application shall be made within twenty-four (24) hours of the malfunction. In cases of major equipment failure, additional time periods may be granted by the Director provided a corrective program has been submitted by the owner or operator and approved by the Director.

4. The pertinent sections of 45CSR13 applicable to this facility include, but are not limited to, the following:

§45-13-6.1

At the time a stationary source is alleged to be in compliance with an applicable emission standard and at reasonable times to be determined by the Secretary thereafter, appropriate tests consisting of visual determinations or conventional in-stack measurements or other tests the Secretary may specify shall be conducted to determine compliance.

§45-13-10.2

The Secretary may suspend or revoke a permit or general permit registration if, after (6) months from the date of issuance, the holder of the permit cannot provide the Secretary, at the Secretary's request, with written proof of a good faith effort that construction, modification, or relocation, if applicable, has commenced. Such proof shall be provided not later than thirty (30) days after the Secretary's request. If construction or modification of a stationary source is discontinued for a period of eighteen (18) months or longer, the Secretary may suspend or revoke the permit or general permit registration.

§45-13-10.3

The Secretary may suspend or revoke a permit or general permit registration if the plans and specifications upon which the approval was based or the conditions established in the

permit are not adhered to. Upon notice of the Secretary's intent to suspend, modify or revoke a permit, the permit holder may request a conference with the Secretary in accordance with the provisions of W. Va. Code § 22-5-5 to show cause why the permit or general permit registration should not be suspended, modified or revoked.

5. *[Reserved]*
6. For the purpose of determining compliance with the calcium chloride production limits set forth in SPECIFIC REQUIREMENTS A.1., the permittee shall maintain records showing the average hourly production rate (calculated on a daily bases) and a 12-month-rolling production total (calculated on a monthly bases). These records maintained on site for a period no less than five (5) years. Certified copies of these records shall be made available to the Secretary or his duly authorized representative upon request.
7. All reports required under the terms and conditions of this permit shall be forwarded to:

Secretary
WV DEP Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
8. For the purpose of determining compliance with the PM emission limits set forth in SPECIFIC REQUIREMENT A.2., and the visible emission standards of 45SCR7, and upon the request of the Secretary, the permittee shall conduct tests in accordance with 45CSR7A .
9. For the purpose of determining compliance with the hydrochloric acid emission limits set forth in SPECIFIC REQUIREMENTS A.3., and upon the request of the Secretary, the permittee shall conduct tests in accordance with 45CSR7A.

C. GENERAL REQUIREMENTS

1. In accordance with 45CSR22 - "Air Quality Management Fee Program", the permittee shall not operate nor cause to operate the permitted facility or other associated facilities on the same or contiguous sites comprising the plant without first obtaining and having in current effect a Certificate to Operate (CTO). Such Certificate to Operate (CTO) shall be renewed annually, shall be maintained on the premises for which the Certificate has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.
2. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

R13-2098C
Tetra Technologies, Inc.
Parkersburg, Wood County, WV

3. The permitted facility shall be constructed and operated in accordance with information filed in R13-2098A, ~~PD99-296, PD99-231, and R13-2098A~~, R13-2098B, R13-209C and any amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to.
4. At such reasonable time(s) as the Secretary may designate, the permittee shall conduct or have conducted test(s) to determine compliance with the emission limitations established in the permit application and/or applicable regulations. Test(s) shall be conducted in such a manner as the Secretary may specify or approve and shall be filed in a manner acceptable to the Secretary. The Secretary, or his/her duly authorized representative, may at his option witness or conduct such test. Should the Secretary exercise his option to conduct such test(s), the operator shall provide all the necessary sampling connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment, and the required safety equipment such as scaffolding, railings, and ladders to comply with generally accepted good safety practices. For any tests to be conducted by the permittee, a test protocol shall be submitted to the DAQ by the permittee at least thirty (30) days prior to the test and shall be approved by the Secretary. The Secretary shall be notified at least fifteen (15) days in advance of the actual dates and times during which the test will be conducted.
5. In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations, either in whole or in part, authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.
6. The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.
7. The permittee shall notify the Secretary, in writing, within fifteen (15) calendar days of the commencement of the construction, modification, or relocation activities authorized under this permit.
8. The permittee shall notify the Secretary, in writing, at least fifteen (15) calendar days prior to actual startup of the operations authorized under this permit.
9. This permit is transferable in accordance with the requirements outlined in Section 8.1 of 45CSR13.
10. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7.
11. On or before July 1st of each calendar year, the permittee herein shall prepare and submit an emission inventory for the previous calendar year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal

R13-2098C
Tetra Technologies, Inc.
Parkersburg, Wood County, WV

requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a submittal frequency other than on an annual basis.

ISSUED BY: _____

William F. Durham, Deputy Director
WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF AIR QUALITY

DATE SIGNED: _____

ATTACHMENT A

LIST OF PROCESS EQUIPMENT COVERED UNDER PERMIT R13-2098BC:

EQUIPMENT ID NO.	Emission Point ID No.	EQUIPMENT DESCRIPTION	Application or Permit <u>or</u> Determination
10-LS-01	VS-01	Loading Rack	R13-2098- (12/9/96)
10-LS-02	VS-01	Loading Rack	R13-2098- (12/9/96)
10-TK-01	VS-01	Storage Tank	R13-2098- (12/9/96)
10-TK-02	VS-01	Storage Tank	R13-2098- (12/9/96)
10-TK-03	VS-01	Storage Tank	R13-2098- (12/9/96)
10-TK-04	VS-01	Storage Tank (Future)	R13-2098- (12/9/96)
10-TK-05	VS-01	Foam Separator	R13-2098- (12/9/96)
10-TK-06	VS-01	Storage Tank (Future)	R13-2098- (12/9/96)
10-RX-01 ²	VS-01	<u>(1)</u> Reactor	R13-2098B (02/10/2014) <u>R13-2098C</u>
<u>10-RX-03</u>	<u>VS-01</u>	<u>(1)</u> Reactor	<u>R13-2098C</u>
10-SR-01	VS-01	Scrubber	R13-2098- (12/9/96)
10-HP-01	PM-01	Hopper	R13-2098- (12/9/96)
20-SI-01	PM-02	Lime Silo	R13-2098- (12/9/96)
20-DC-01	PM-02	Lime Silo Bag House	R13-2098- (12/9/96)
30-TK-01	Not Numbered	Storage Tank	PD99-231 (10/5/99)
30-TK-02	Not Numbered	Storage Tank	PD99-231 (10/5/99)
30-TK-03	Not Numbered	Storage Tank	PD99-231 (10/5/99)
<u>(1) Reactors 10-RX-02 and 10-RX-03 replaced reactor 10-RX-01 which was approved under R13-2098B.</u>			

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that all information contained in the attached _____, representing the period beginning _____ and ending _____, and any supporting documents appended hereto, is true and correct to the best of my knowledge and that all reasonable efforts have been made to provide the most comprehensive information possible.

Name (Type or Print): _____

Signature¹: _____

Title: _____

Date: _____

Telephone No.: _____

Fax No.: _____

¹This form shall be signed by a "Responsible Official". "Responsible Official" means one of the following:

- a. For a corporation: the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either (i) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding \$25 million (in second quarter 1980 dollars), or (ii) the delegation of authority to such representative is approved in advance by the Chief;
- b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;
- c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of U.S. EPA); or
- d. The designated representative delegated with such authority and approved in advance by the Chief.