Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

COPY

WYOMING DEPARTMENT OF ENVIRONMENTAL QUALITY
Air Quality Division

FY '92 ANNUAL INSPECTION REPORT

NAME OF FIRM:	General Chemical Partners (formerly Allied Chemical)
NAME OF PLANT:	Green River Works
PLANT LOCATION:	Sections 29, 30, 31, 32 & 33 of T19N, R109W and Sections 4, 5 & 6 of T18N, R109W (located about 25 miles west of Green River, Wyoming, 3 miles north of I-80, adjacent to the Church & Dwight Sodium Products Plant)
PLANT MANAGER:	Keith Clark, Plant Manager
ENVIRONMENTAL CONTACT:	Dave Hamel, Technical Services Manager
PLANT ADDRESS:	P.O. Box 551, Green River, Wyoming 82935
TELEPHONE NUMBER:	(307) 875-3350 (307) 872-3625 - Hamel
INSPECTION DATE:	September 6, 1991
COMPANY REPRESENTATIVE:	Dave Hamel, Technical Services Manager
DIVISION INSPECTOR:	Lee Gribovicz, District Air Quality Engineer 9/16/91
LAST ANNUAL INSPECTION REPORT:	November 7, 1990
STAFF REVIEW:	Charles A. Collins, Air Quality Administrator Bernie Dailey, Air Quality Supervisor Dan Olson, Air Quality Enforcement Officer
REPORT DATE:	September 16, 1991

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PLANT DESCRIPTION:

This plant refines trona ore (sodium sesquicarbonate, $Na_2CO_3 \cdot NaHCO_3 \cdot 2H_2O$) to produce purified soda ash (sodium carbonate, Na_2CO_3) by first driving off the ore's bicarbonate CO_2 and the water of hydration, using natural gas fired calciner kilns. The calcined soda ash is then dissolved in water to separate out insoluble impurities, the solution is filtered, the salt recrystallized in triple effect evaporators, dewatered in centrifuges, dried in natural gas fired dryer kilns, milled and screened to product size specifications, before being shipped out by bulk truck or rail.

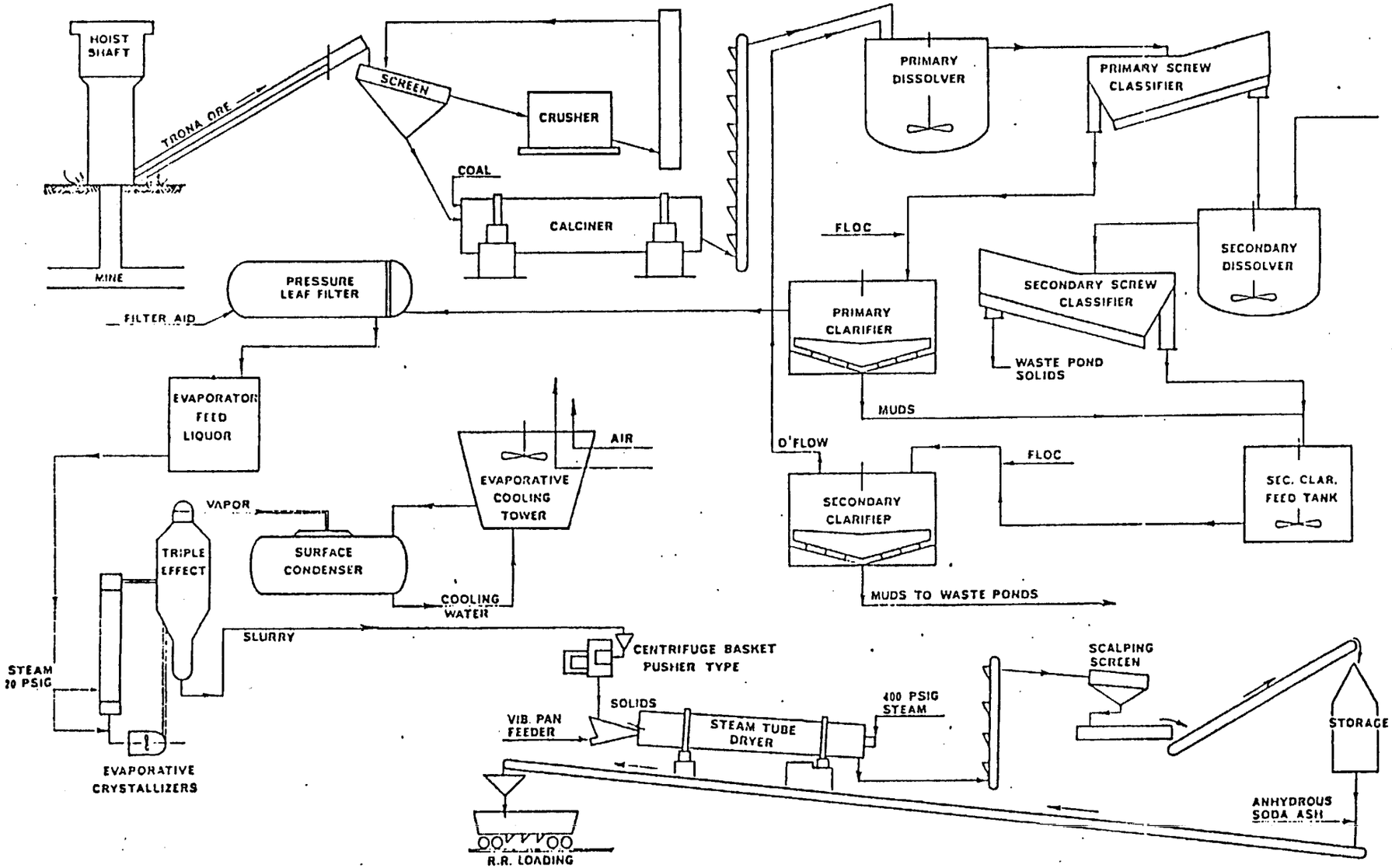
The plant has two major production buildings, with one building housing equipment designated as GR-I (for the Green River Works original construction in 1968) and equipment designated as GR-II (for equipment added during the first plant expansion in 1972). The other process building is designated as the GR-III unit, which was part of a second plant expansion which came on line in 1975. GR-I&II unit received a debottlenecking permit in 1990 which allows an increase in rated capacity from 1.1 MM TPY of soda ash, up to 1.4 MM TPY. GR-III unit has a rated capacity of 1.1 MM TPY, for a total current permitted capacity of 2.5 MM TPY of soda ash production.

Basic emission generating equipment used in the GR-I&II unit includes a crusher, five gas fired calciners, seven steam tube dryers (including the new unit permitted under the debottlenecking permit), and various ore and product handling housekeeping dust control systems. Basic equipment in the GR-III unit includes a separate crusher, two larger gas fired calciners, five steam tube dryers, and more ore and product handling housekeeping dust control systems. Both the GR-I&II and the GR-III process trains formerly had product coolers to cool product out of the dryers, but this capability was removed in 1989.

Steam and power demands are met by two coal fired utility boilers. "C" boiler is rated at 534 MM Btu/Hr, producing 380,000 pph of steam. "D" boiler is rated at 880 MM Btu/Hr, producing 660,000 pph of steam. "C" boiler was installed as part of the GR-II plant expansion and came on line in 1974. "D" boiler was part of the GR-III expansion, beginning operation in 1975. Two gas fired boilers, installed with the original plant in 1968 (designate "A" and "B"), now serve as backup to the two coal boilers. The "A" and "B" backup boilers formerly had oil firing capability, but the plant oil systems are no longer operational.

Table I, attached to this report, provides an itemized listing of all plant point emission sources and their tested or estimated pollutant emission rates. Figures 1 and 2 depict the plant process flow in diagram form. Figure 3 is a plan drawing of the plant showing the location of the plant emission sources.

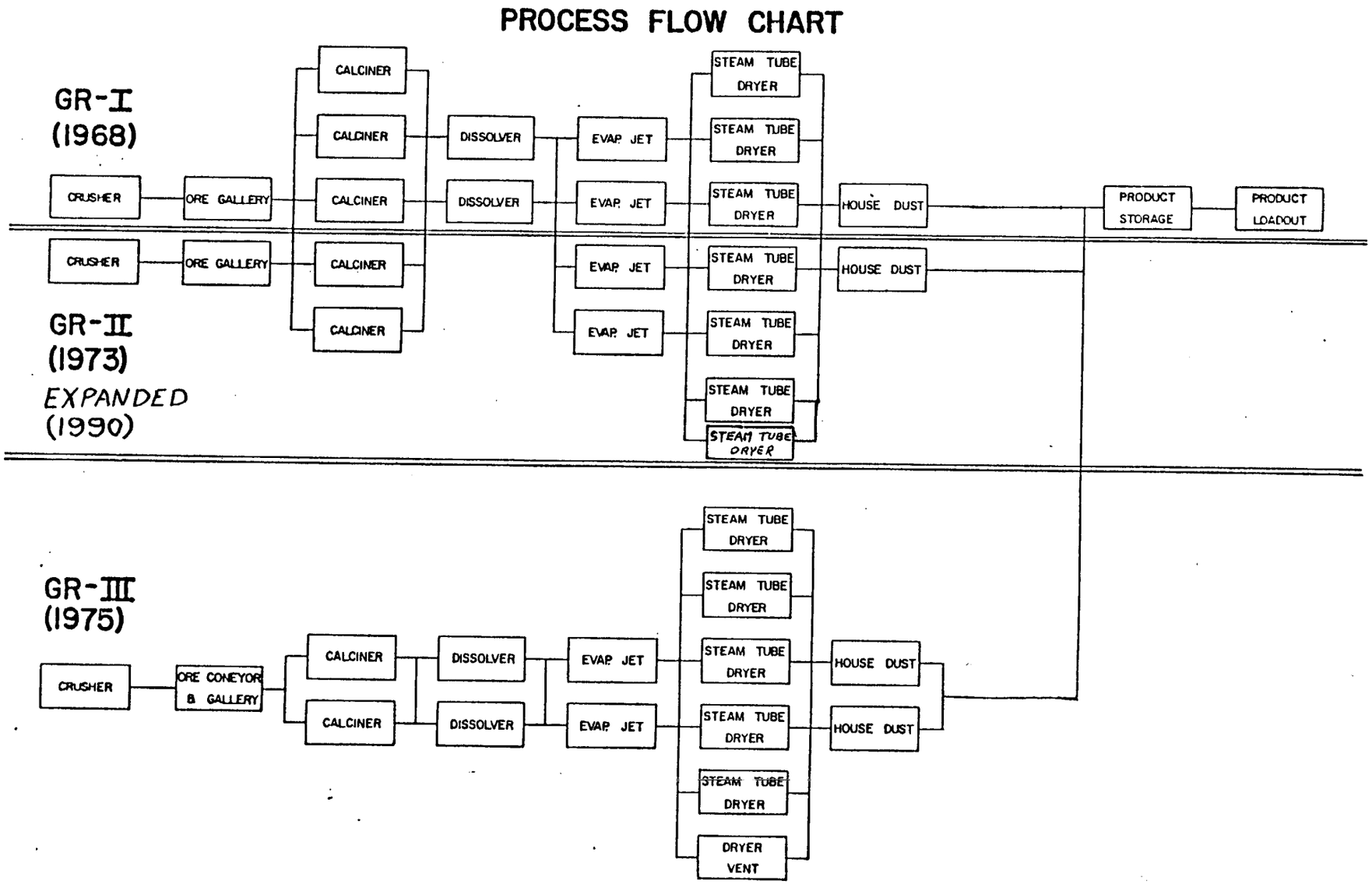
FIGURE 1



COMPOSITE FLOW DIAGRAM - GREEN RIVER WORKS

FIGURE 2

GENERAL CHEMICAL GREENRIVER WORKS



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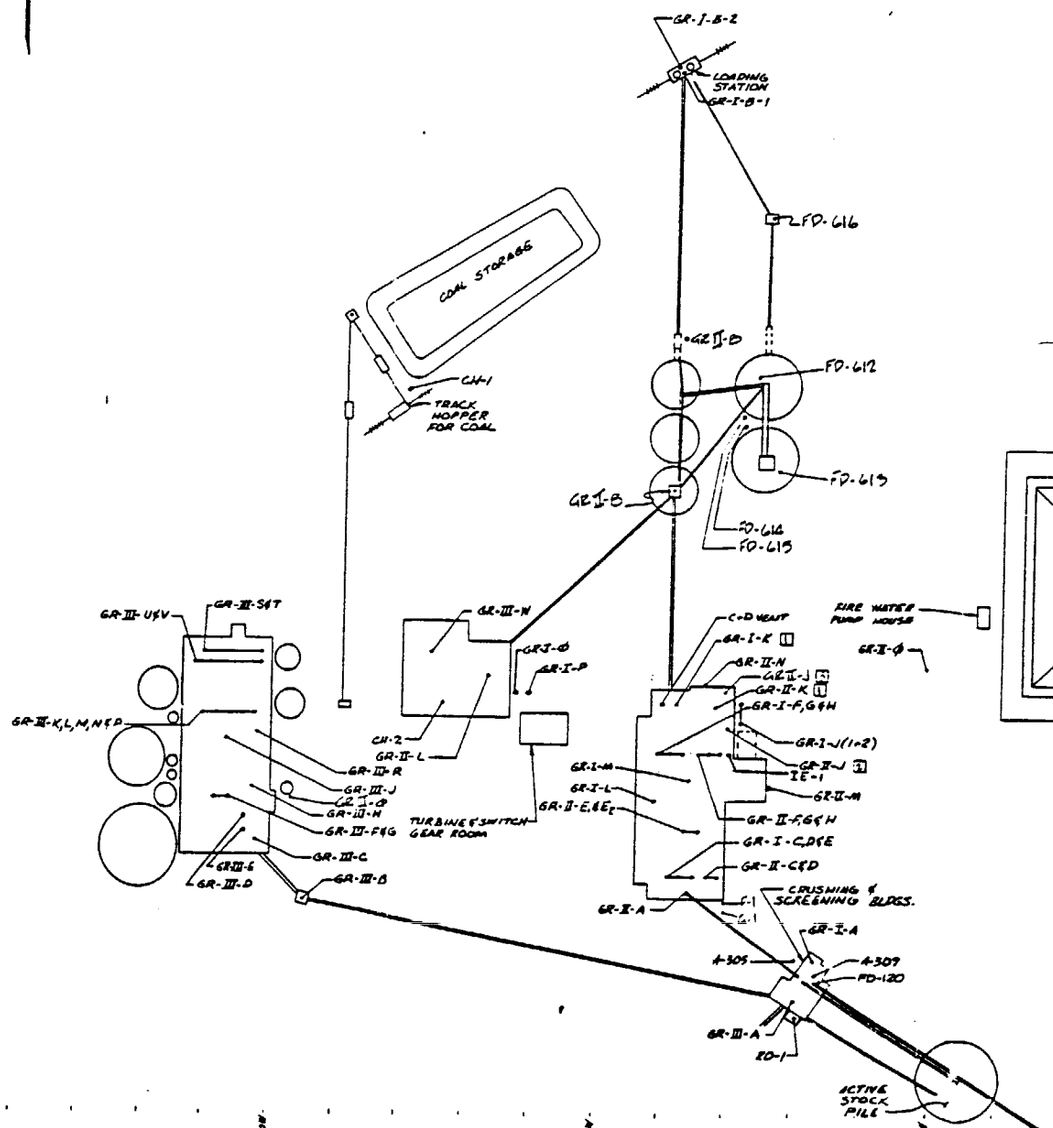


CODE NO.	SOURCE
GR-1-A	CRUSHER BUILDING
GR-1-B-(1)	PRODUCT LOADING
GR-1-B-(2)	PRODUCT LOADING
GR-1-C	CALCINER
GR-1-D	CALCINER
GR-1-E	CALCINER
GR-1-F	STEAM TUBE DRYERS
GR-1-G	STEAM TUBE DRYERS
GR-1-H	STEAM TUBE DRYERS
GR-1-J-(1)	HOUSE DUST VENT SYSTEM
GR-1-J-(2)	HOUSE DUST VENT SYSTEM
GR-1-K	PRODUCT COOLER DISMANTLED
GR-1-L	EVAP. STEAM JET-1
GR-1-M	EVAP. STEAM JET-2
GR-1-Ø	"A" BOILER
GR-1-P	"B" BOILER
GR-11-A	ORE GALLERY INCLUDING GR-1
GR-11-B	PRODUCT STORAGE BINS INCLUDING GR-1
GR-11-C	CALCINER NO.4
GR-11-D	CALCINER NO.5
GR-11-E	DISSOLVER NO. 1
GR-11-E	DISSOLVER NO. 2
GR-11-F	STEAM TUBE DRYER NO. 4
GR-11-G	STEAM TUBE DRYER NO. 5
GR-11-H	STEAM TUBE DRYER NO. 6
GR-11-J	HOUSE DUST VENT SYSTEM
GR-11-K	PRODUCT COOLER DISMANTLED
GR-11-L	GR-11-BOILER
GR-11-M	EVAP. STEAM JET-3
GR-11-N	D/A STEAM EJECTOR
GR-111-A	CRUSHING & SCREENING

CODE NO.	SOURCE
GR-111-C	ORE TRANSFER
GR-111-C	ORE BIN GALLERY
GR-111-D	CALCINER
GR-111-E	CALCINER
GR-111-F	DISSOLVER VENT
GR-111-G	DISSOLVER VENT
GR-111-H	FILTER-AID
GR-111-J	M.L. FLASH DEAERATOR
GR-111-K	STEAM TUBE DRYER
GR-111-L	STEAM TUBE DRYER
GR-111-M	STEAM TUBE DRYER
GR-111-N	STEAM TUBE DRYER
GR-111-P	STEAM TUBE DRYER
GR-111-R	DRYER VENT
GR-111-S	PRODUCT COOLER
GR-111-T	PRODUCT COOLER
GR-111-U	HOUSEKEEPING
GR-111-V	HOUSEKEEPING
GR-111-W	BOILER
A-305	CRUSHER BUILDING
A-309	RECLAIM ORE HANDLING
CH-1&2	COAL HANDLING
RO-1	RECLAIM ORE SYSTEM
GR-11-B	LIME STORAGE BIN
C-D	VENT DISMANTLED
FD-120	CRUSHER BLDG BASEMENT

GR III & LIME STORAGE BIN
FD-612 PRODUCT STORAGE
FD-613 PROD. STORAGE
FD-614 PROD. CONVEYOR
FD-615 PROD. CONVEYOR
FD-616 PROD. TRANSFER
IE-1 STEAM TUBE DRYER

[1] DISMANTLED
[2] REPLACED WITH WET SCRUBBER
[3] NEW LOCATION GR-11-J

FIGURE 3

1	NEW UPDATE - ADDED NEW EQUIP		
NO.	REVISIONS	BY	APPROVED

Allied Chemical — INDUSTRIAL CHEMICALS DIVISION

EMISSION LOCATION PLAN

D 1000 - 100 - 1001 1

AIR QUALITY PERMITS:

EPA GR-III Permit (7/26/73)

This permit allowed Allied Chemical to double plant production capacity from 3000 to 6000 TPD by constructing the GR-III production unit. Point sources created included the GR-III designated equipment listed in Table I, including "D" boiler. Details can be found in Allied's application of April 26, 1973 and addendum package of June 6, 1983. EPA permit conditions included ambient TSP and SO_2 monitoring and reporting requirements, along with start-up notification and performance testing requirements. All permit conditions have been and continue to be met.

AQD GR-IV Application (7/25/75)

By a July 25, 1975 package Allied made application to build another 3000 TPD production unit, but after obtaining additional information, the Division informed the company (November 23, 1977) that the permit could not be issued as proposed because of predicted violations of ambient particulate standards. The option was left open for Allied to modify the proposal; however no additional interest was ever shown by the company and the application has remained inactive since that time.

Compliance Program Application (9/21/76)

Under cover of a September 21, 1976 letter; Allied applied to construct CH-1 and CH-2 coal dust control systems, A-309 crusher building dust control system, GR-1-B(2) baghouse in the product loadout building, and GR-1-J(1) and GR-1-J(2) housekeeping dust collection systems in the GR-I&II product handling area. The collection points for these systems and specifications are presented in the application. The Division reviewed these proposed modifications and found that no permit was required. Allied was so notified by the Division's letter of November 9, 1979.

MD-20 (10/19/77) // OP-99 (2/4/83)

This permit allowed Allied to construct a modified trona ore stockpile reclaim system. The only point source constructed as part of this project was RO-1 crusher area housekeeping dust control system and baghouse. Complete details of the application can be found in Allied's application of June 8, 1977. The only condition attached to this permit was to guarantee Division personnel access to the site to investigate air pollution matters. This condition has been fulfilled.

This source has an allowable particulate emission rate of 1.4 pph set by Section 25 of the Wyoming Air Quality Standards and Regulations. The source was tested at 0.99 pph in November of 1978. The Division's memo of February 3, 1983 summarizes the events leading up to the issuance of the operating permit for this source. The Division has noted no excess emissions from RO-1 during recent inspections.

CT-222 (5/16/79) // OP-97 (2/4/83)

This permit allowed Allied to construct two new soda ash storage silos (#4 and #5), with a capacity of 20,000 tons each. Allied also modified the dust control systems in the product screening area of GR-II and in the plant crusher. Point sources constructed under this application were FD-612, 613, 614, 615 and 616 associated with the new storage silos; GR-2-J in the GR-I&II screening area; and FD-120 in the GR-I&II crusher. Dismantled as part of this project were the old GR-2-J dust collection system, GR-1-K,and GR-2-K, all old housekeeping dust collectors in the product screening area of GR-I&II unit. Complete details of this project can be found in Allied's application of January 29, 1979 as modified by their letter of November 21, 1979. Conditions of OP-97/CT-222 set particulate emission mass rate allowable limits for the seven new point sources constructed under this permit, which have since been revised under subsequent permits. The Division's memo of February 3, 1983 details Allied's compliance with the permit conditions leading up to the issuance of the operating permit. During recent inspections, the Division has noted no excess emissions from any of these point sources and concludes that they are still in compliance with applicable requirements.

CT-130 (4/3/78) // OP-138 (1/25/85)

This permit allowed Allied to construct a 4,000 cu. ft. lime storage silo and lime slaking unit for the GR-I&II unit. The only emission point from this project was the bin vent filter (designated GR-2-O) used to vent the storage silo during pneumatic lime delivery. Complete details of this project can be found under Allied's application of January 20, 1978. As a condition of this permit, the allowable particulate emission rate from the bin vent filter was set at 0.08 pph. The December 10, 1984 Annual Inspection report reviewed the history of this project and recommended the issuance of the operating permit. No lime deliveries have been observed during recent inspections.

CT-291 (5/6/80) // OP-139 (1/25/85)

This permit allowed Allied to construct a second plant lime storage silo and lime slaking unit identical to the one permitted under CT-130, this one for the GR-III unit. The bin vent filter emission point for this operation was designated GR-3-O. Complete details of this project can be found in Allied's application of December 12, 1979. Conditions of this permit set the allowable particulate emission rate for the lime bin vent at 0.08 pph and required the shut down of another source known as the "C&D vent". The December 10, 1984 Annual Inspection report reviewed the history of this project recommended the issuance of the operating permit. No lime deliveries have been observed during recent inspections.

MD-36 (7/27/81) // Expired

This permit was granted to Allied to eliminate certain plant bottlenecks, which would have raised the plant capacity from 2.2 to 2.4 MM TPD. Work was never commenced on

the project and in the inspection transmittal letter of January 23, 1985, Allied was notified that the permit has expired.

MD-39 (6/12/82) // Expired

This permit was granted to Allied to allow conversion of GR-II-D calciner from natural gas to coal firing. In December of 1982, Allied submitted another permit application to convert the remaining calciners to coal. Work was never completed on these conversions and in the inspection transmittal letter of January 23, 1985, Allied was notified that MD-39 had expired.

Coal Stockpile Waiver (10/18/89)

This permit waiver allowed General Chemical to operate two adjacent emergency coal stockpiles, one of 6,000 tons and another of 10,000 tons capacity, in conjunction with a conversion from rail coal delivery to a bottom dump coal truck delivery system. Conditions of the waiver required General to report any construction or reclamation activities on the piles, use acceptable dust suppression techniques to hold fugitive emissions within 20% during all periods of coal moving activity, seal the pile during dormant storage periods, pave the truck delivery route and maintain that route in a clean condition, use only bottom dump coal delivery trucks so that the existing coal handling control equipment remained effective, and live by all representations made in their proposals for this project. Complete details can be found in the following file correspondence:

Date	Source	Content Summary
12/23/85	ACC	notification of reduction in coal inventory to 6,000 tons
01/02/86	AQD	conditioned approval of coal operation scheme
06/30/88	GCC	notification of abandonment of a 6,000 ton coal stockpile
11/01/88	GCC	reconsideration & request to reestablish a 3,000 ton stockpile
08/17/89	GCC	request to resume use of 6,000 ton emergency coal stockpile
08/28/89	GCC	request to establish a truck coal delivery system, along with another 10,000 ton emergency coal stockpile
10/18/89	AQD	memo of review of revised coal handling proposal
10/18/89	AQD	conditioned approval for revised coal handling scheme

By January 10, 1991 memo (attached as an appendix to this report), General reported 18,731 tons of construction on the pile during 1990 and 23,791 tons of reclamation activity over the year. The December pile inventory was 1,840 tons. The maximum inventory reported for the year was 16,667 tons in July, slightly over the maximum allowed by the waiver.

MD-121 (3/16/90)

This permit allowed General Chemical to replace an existing trona ore crusher with a new Pennsylvania Impactor roll crusher, as well as to revamp an old ore screening system in the crusher building. To control dust from this operation, General

Chemical revised their GR-3-A dust collection system by increasing its air flow 27%, to over 33,000 acfm. Permit conditions set the allowable emission rate for this modified system at the NSPS Subpart OOO limit of 0.05 grams/dscm, not to exceed 2.0 pph mass rate cap. Per the NSPS, the allowable opacity for this stack was set at 7%. Details of this project may be found in the following file correspondence.

Date	Source	Content Summary
12/20/89	GCC	permit application for GR-III crusher modification
02/13/90	AQD	publish Public Notice of permit analysis
03/16/90	AQD	MD-121 issued
05/03/90	GCC	notification of start-up and proposed testing schedule
05/25/90	GCC	scheduling of exact test dates
06/08/90	TEMP	submission of test protocol by consultant
07/02/90	GCC	notification that test failed due to improper bags & cages
09/27/90	AQD	memo of retest observations
10/18/90	TEMP	September test report showing 2.23 pph total particulate emissions
12/06/90	GCC	preliminary retest results & discussion of back half contribution
12/07/90	AQD	review of September test results
01/10/91	TEMP	November test report showing 2.17 pph total particulate emissions

Completion of construction and start-up of this unit occurred on April 30, 1990 according to General Chemical's May 3rd notification. Testing was initially conducted in June, 1990, but results averaged over 18 pph. General Chemical attributed this problem to mismatched bags and cages, which caused some of the bags to burst at their seams. General ordered a set of the proper replacement bags and cages, and retested in September, 1990. This test report showed emissions averaging 12% over the standard, at 2.24 pph.

During the FY '91 inspection, it was clarified that there was a typographical error in the subsequent MD-129 permit which listed the allowable for GR-3-A at the old Section 25 allowable of 3.0 pph. The May 22, 1991 Inspection Transmittal letter clarified that the MD-121 analysis clearly intended to set the allowable at 2.0 pph, and provided General with a corrected MD-129 Table I showing a 2.0 pph allowable for GR-3-A.

General was unable to find any problems which would pinpoint why the September test showed emissions over the 2.0 pph allowable, so they made arrangements to retest the stack to confirm the testing methods. The retest was conducted in November, 1990. This test report still showed emissions over the standard, although slightly reduced at 2.17 pph.

In discussions of the test results, it was pointed out that the tests total particulate catch was composed of a significant back half catch, 65% on the September run and 37% on the November test work. After the second test (12/6/90 letter) and in the test transmittal letter (1/10/91) Mr. Hamel raised the issue of the appropriateness of using this back half in determining GR-3-A compliance. He pointed out that the original 1976 testing which was partially used to set the 2.0 pph BACT

allowable in the MD-121 permit analysis, showed 1.4 pph emissions using front half catch only, and that if front half catch was used to determine compliance with GR-3-A, the stack would be well within the allowable (0.79 pph FH in September, 1.36 pph FH in November).

The Division has reviewed General Chemical's arguments regarding the appropriateness of the 2.0 pph allowable for set for GR-3-A and agrees that the original 1976 tests were improperly used in setting a total particulate emission limit for this stack. Using the 1990 test results, GR-3-A has shown that it can meet a total particulate emission limit of 2.50 pph, including slightly over 10% margin for test error. All other conditions of the permit have been satisfied, therefore the Division should issue the operating permit for this project, with a revised allowable mass rate of 2.50 pph, to accommodate the actual test results.

MD-129 (10/8/90)

This permit allows General Chemical to undertake plant debottlenecking modifications which increases the GR-I&II capacity from 1.1 to 1.4 MM TPY of soda ash production, thus giving the entire plant a capacity of 2.5 MM TPY. The only new piece of emission generating equipment considered in the permit is a new gas fired product dryer in the GR-I&II plant, designated source IE-1. Also General Chemical will increase the crusher and calciner throughput tonnages as part of this project.

Conditions of MD-129 include setting NSPS Subpart OOO allowables for 17 material handling sources in the GR-I&II plant, setting particulate emission limits and opacity standards for all Green River plant emission sources, setting NO_x emission standards for the GR-I&II calciner stacks, requiring opacity monitors for the GR-I&II calciner stacks, requiring pressure drop and flow measuring equipment on the 4 wet scrubber stacks in GR-I&II unit, and requiring Subpart OOO scrubber reporting for the 3 NSPS applicable GR-I&II wet scrubber sources included in the analysis.

Details of this project can be found in the following file correspondence:

Date	Source	Content Summary
05/05/89	GCC	initial permit application for 300,000 TPY production increase
06/01/89	AQD	notification of deficiency and request for PM-10 analysis
08/07/89	GCC	submittal of PM-10 modeling package
09/15/89	ENSR	FAX copy of consultant's source identification list
09/20/89	ENSR	letter identifying modeled area of non-compliance
10/03/89	AQD	memo of actual vs. allowable plant emissions
11/16/89	AQD	deficiency letter citing PM-10 modeling problems, unaddressed modifications of other process equipment & meteorological data
12/08/89	AQD	description of stockpile fugitive emissions factor components
01/09/90	AQD	notes of meeting regarding stockpile PM-10 emissions research
01/24/90	GCC	stockpile PM-10 emissions testing protocol
05/17/90	GCC	new permit application for debottlenecking project (rev. June)
05/17/90	ENSR	initial PM-10 modeling package (revised July)

05/23/90	AQD	meeting notes regarding definition of "modification"
06/04/90	ENSR	source data and explanation of PM-10 calculations
06/06/90	AQD	meeting notes regarding PSD, NSPS & PM-10 fraction calculation
06/07/90	GCC	final revised permit application for debottlenecking project
06/13/90	ENSR	PM-10 & TSP modeling for PSD increment consumption
07/17/90	GCC	listing of exhaust flows and emissions for NSPS Subpart OOO
07/19/90	GCC	revised dryer scrubber parameters
07/23/90	LAW	lawyer's request for copies of permit documents
07/27/90	ENSR	final PM-10 modeling package, addressing latest concerns
08/02/90	GCC	calciner NO_x emission data
08/13/90	AQD	notification to General Chemical that application is complete
09/05/90	AQD	publish Public Notice of permit analysis
10/08/90	AQD	MD-129 issued
05/22/91	AQD	request for a project implementation schedule
07/03/91	GCC	notification of delay in submitting project implementation schedule
08/09/91	GCC	submittal of project implementation schedule

"Implementation Schedule"

As noted in the last inspection report, General plans on stretching out the completion of the work under this debottlenecking project for several years. The Division asked for and received a written project implementation schedule (8/9/91) and during this inspection, I asked Mr. Hamel to clarify activities that will be completed under the schedule. This is the first relatively detailed review of specific work items that will be completed under the debottlenecking project and one of the first things that I discovered was that General Chemical will not only be modifying the GR-I&II unit as described in the permit application and the Division's permit analysis, but will also be making numerous modifications to the GR-III unit, as well. Mr. Hamel told me that General Chemical would be unable to obtain the entire 300,000 TPY production increase solely from the GR-I&II unit alone, thus the project would involve modifying the calciners and dryers in the GR-III unit for throughput increases. I mentioned that the Division would probably require testing on the modified sources in GR-III unit, but the full repercussions of this disclosure did not hit me while I was at the plant site. It is likely that some sources in the GR-III unit will be subject to NSPS under this modification if there are throughput increases, NO_x emissions were not considered from the GR-III calciners as they were in the permit from the GR-I&II calciners, and BACT issues were not explored regarding GR-III emission equipment.

On September 11, 1991, I telephoned Mr. Hamel and explained that the Division had not considered any modifications to GR-III unit in MD-129. In our discussion of calciner upgrades listed in the project implementation schedule, I was told that part of this project involved installing "trefoils", which were modified lifting vanes inside the kilns. It is clear that such a modification has the potential to change the dust loading out of the kiln, which in turn would change the stack emissions. Mr. Hamel told me that the "flash tanks", which are planned for the GR-III dryers, would affect only the wet portion of the process, with no emission changes. I asked Mr. Hamel to

prepare a written discussion, describing in more detail, the modifications that will be made to GR-III, with particular emphasis on how these changes would affect emissions and/or throughput. Upon review of this report, the Division can make a final determination on whether additional permitting of GR-III modifications is necessary. If Mr. Hamel's report has not be received by the time this inspection is transmitted to General, the Division should inform General Chemical that a review of GR-III activities will be necessary before such modifications can legally proceed.

"Opacity Monitors"

One of the Division's priority items in this permit is installation of the opacity monitors on the GR-I&II calciners. In reviewing General's plans for this project, I note that they plan on installing these monitors in 1992, with excess emission reporting beginning by the 4th quarter of the year. The GR-I&II calciners will not be upgraded until 1993, according to the implementation schedule, thus the opacity monitors will be in place prior to throughput increases on these calciners and the plan is acceptable to the Division.

"Scrubber Monitoring"

Also, installation of pressure drop monitoring and flow rate instrumentation on the 3 GR-I&II scrubbers subject to NSPS will be completed in 1992, with semi-annual scrubber deviation reporting beginning by the 4th quarter of that year.

"Stack Testing"

Regarding testing of the GR-I&II sources, General proposed to test one of each category of sources, but I told Mr. Hamel that the Division would want to be more specific regarding some types of sources. With the 5 calciners being the most significant sources in GR-I&II unit, and knowing that idiosyncracies of individual electrostatic precipitators can result in wide differences in emissions from these otherwise identical sources, I told Mr. Hamel that the Division would want to test all five of these units. Also, I noted that they had proposed to test a calciner in the 4th quarter of 1992, but that modifications of these kilns would not be completed until sometime in 1993. Thus testing in 1992 would not be representative of long term emissions from the modified units and should be delayed until after modifications are compete. Testing of the calciners will be required to verify compliance with both particulate matter and NO_x emission limits.

Regarding testing of GR-I&II dryer scrubbers, General proposed to test only one of these units, with that testing occurring in the 4th quarter of 1992. The GR-I&II dryer scrubbers are major process sources, which will be modified with "improvements" in 1992 and "discharge screw upgrades" in 1993. The Division will require testing on all six of these existing dryers, sometime after all modifications to the units are completed in 1993. The new dryer (IE-1) will be installed under this permit in 1996, and testing of this unit will have to be accomplished after start up that year.

Regarding crusher area sources, there are six systems in the area associated with this permit. GR-1-A, a 25,000 acfm system controlling the GR-I&II crusher, is the largest of these systems in the area. It will receive an "upgrade" in 1994 according to the implementation plan; a modification which Mr. Hamel told me will consist of a new impactor crusher installation, similar to the one permitted under MD-121 for the GR-III unit. Thus it is clear that emissions will be affected enough to warrant inclusion of this source on the test list after completion of the project in 1994.

GR-2-A is an approximately 24,000 acfm system controlling the belt galleries between the crusher and GR-I&II unit. Its allowable was reduced from 3.0 to 2.95 pph under this permit to meet Subpart OOO requirements. It was tested in 1977 at 0.5 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

RO-1 is another 24,000 acfm system, controlling vents from the stockpile ore reclaim screens. Its allowable remained at 1.4 pph under this permit, while it tested at 1.0 pph in 1978. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

FD-120 is a 19,000 acfm system controlling general crusher building conveyor transfer points. Its allowable remained at 2.0 pph under this permit, while it tested at 0.2 pph in 1979. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

A-305 is a 10,000 acfm system controlling GR-III unit ore screens and transfer points. Its allowable was reduced from 2.0 to 1.51 pph under this permit to meet Subpart OOO requirements. It was tested in 1976 at 0.4 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

A-309 is another 10,000 acfm system controlling stockpile ore reclaim screens and transfer points. Its allowable was reduced from 2.0 to 1.28 pph under this permit to meet Subpart OOO requirements. It was tested in 1976 at 0.4 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

The allowables for the two dissolver scrubbers, GR-2-E(1) and GR-2-E(2), remained at 3.00 pph under this permit, while the units were tested at 1.7 and 1.3 pph, respectively, back in 1974. These are relatively small emission systems (appx. 8,000 acfm) and there are no indications that this system will be altered enough under this

project to significantly change the emissions, therefore no testing of these sources will be required unless opacity observations indicate that testing is warranted.

The three product screening scrubbers are all relatively large systems (GR-1-J(1) - 23,000 acfm; GR-1-J(2) - 18,000 acfm; and GR-2-J - 39,000 acfm), which are all subject to NSPS scrubber monitoring requirements. As noted above, the pressure drop and scrubber liquor flow measuring instrumentation will be in place on these scrubbers in 1992. In that year also, there will be a grinder added to this product handling section of the plant to mill oversize product to specifications, rather than redissolving the ash as had been previously done, presumably adding dust loading to the systems. In 1993, the GR-I&II product conveyors to the storage silos will be upgraded with wider belts for more capacity. With these changes to the dust collection systems on these three scrubbers, and considering the fact that Subpart OOO requires reporting of pressure drop and scrubber liquor flow deviations from tested values, it will be necessary to test all three of these scrubbers after modifications are complete in 1993.

Regarding the product handling sources, GR-2-B, controlling the overhead belt galleries and vents from the smaller three product silos and the underground reclaim transfer points, is by far the largest of the systems at around 40,000 acfm. Larger capacity conveyor belts from the GR-I&II unit and upgrades in the gallery belts in 1993, will change the inlet loading to this source. In addition, recent plant observations have focused on this baghouse as having consistently marginal performance. Also, the allowable was reduced from 4.0 to 3.00 pph as a proposed tradeoff under this permit. Therefore, because of all of these factors, the Division finds that it will be necessary to confirm compliance with testing on this source.

GR-1-B(1) and GR-1-B(2) are 17,000 and 8,000 acfm sources controlling transfer points bin vents and loading spout emissions in the rail loadout building. General is planning a rail loadout upgrade in 1993, which will increase the number of loadout spouts for faster filling of rail cars. The allowable for GR-1-B(1) was reduced from 3.0 to 2.28 pph under this permit to meet Subpart OOO requirements, while it was tested at 0.7 pph in 1975. Similarly the allowable for GR-1-B(2) was reduced from 3.0 to 1.01 pph, while its most recent test showed 0.1 pph back in 1977. In order to verify whether the modifications to the loadout area adversely affect the compliance of these sources, the Division will require General Chemical to test the largest of the two, GR-1-B(1) after modifications are complete in 1993. An NSPS opacity determination should be made prior to making a determination on whether testing is necessary on GR-1-B(2).

FD-612 is a 16,000 acfm system controlling silo #4 vents and overhead belt galleries around this silo. Its allowable remained at 1.50 pph under this permit, while it was tested in 1981 at 0.64 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

FD-613 is an 8,000 acfm system controlling silo #5 vents and the overhead belt galleries around this silo. Its allowable was reduced from 1.50 to 0.90 pph under this permit to meet NSPS requirements. It was tested in 1981 at 0.61 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

FD-614 is a 10,000 acfm system controlling silo #5 underground reclaim transfer points. Its allowable remained at 1.00 pph under this permit, while it was tested in 1981 at 0.31 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

FD-615 is another 10,000 acfm system controlling silo #4 underground reclaim transfer points. Its allowable remained at 1.00 pph under this permit, while it was tested in 1981 at 0.44 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

FD-616 is an 7,000 acfm system controlling the transfer points in the conveyor transfer house between the silos and the rail loadout building. Its allowable was reduced from 1.00 to 0.80 pph under this permit to meet NSPS requirements. It was tested in 1981 at 0.28 pph. There are no indications that this system will be altered enough under this project to significantly change the emissions, thus an NSPS opacity determination should be made prior to making a determination on whether testing is necessary on this source.

In summary, the Division will be requiring General Chemical to conduct testing on the five GR-I&II calciners, the six existing GR-I&II product dryers, the new IE-1 product dryer, GR-1-A in the crusher building, the three GR-I&II product screening area scrubbers, GR-2-B in the silo area, and GR-1-B(1) in the product loadout building. All testing will be Reference Method work for particulate mass rate, with NO_x mass rate testing added on the calciners. Testing for other housekeeping baghouse dust collection systems will be indefinitely postponed, unless NSPS opacity observations or other review indicates a possibility that these sources are operating outside there allowable emission limits.

"Industrial Ventilation System Modifications"

The above test list was based on information presented to date regarding modifications to the GR-I&II plant systems, with an attempt to evaluate potential emission changes from these sources. It appears, however, that there will be changes made to a number of the industrial ventilation systems on these sources, the full impact of which, cannot be yet be predicted. In order to analyze these changes, the Division will require General Chemical to supply a report listing all sources for

which any changes will be made to the industrial ventilation systems leading to these stacks. If there are any changes to pickup points, pollutant capture hoods, duct work, or emission control devices, the Division will require General Chemical to supply a line diagram of the revised systems showing these changes. The diagram should show the pickup points, duct sizes, carrying velocities and volumes in each leg of the ventilation system. If General Chemical replaces or modifies any of the emission control devices, the Division will require the specifications and a drawing of the new control device (ie/scrubber, baghouse, precipitator, etc.).

"NSPS Subpart OOO Opacity Observations"

In order to meet Subpart OOO requirements, General Chemical will be required to complete three hour opacity readings on the 14 dry baghouse sources subject to NSPS under this permit. In order to maximize the utility of these readings, there are certain elements that will be necessary in reports for each source. First, the company must include a description of how the process was operating during the reading, including process rates for all affected equipment. Secondly, to enable the Division to visualize the conditions under which the readings were taken, the company must include a photograph of the stack from the opacity vantage point taken during the opacity reading. Original photographs must be sent to both of the Division's offices (no xerox copies). The opacity form itself must list all of the 15 second opacity readings that were taken, the time and date they were taken, a sketch of the location from which they were taken, a description of the emission plume and the background, the name of the person who took the readings, and evidence that the observer is currently certified to read opacity.

"Boiler Replacement"

General Chemical's project implementation plan contains provisions to replace "B" boiler in 1995, with a new steam boiler package. The Division's review of MD-129 did not consider the installation of a new boiler in any fashion. General Chemical should be notified that a permit review of this project must be completed before a new boiler can be legally installed at the plant site.

Bulk Truck Loadout Waivers (9/12/90 & 8/2/91)

These first waiver allowed General Chemical to construct a new fixed position DCL truck loading station in response to the Division's Notice of Violation for excess opacity from the old truck loading system. Later, General Chemical applied for permission to construct another twin movable spout DCL truck loading station, with the first unit to serve as a backup. Three point sources were created, each 1800 acfm DCL baghouses with concentric pickup lines around the three soda ash loading spouts. Each unit will emit 0.23 pph when operating, with the first unit to operate only when the twin movable spout system is down. Thus maximum emissions at any one time will be 0.46 pph.

Details of the project can be found in the following file correspondence:

Date	Source	Content Summary
07/31/90	AQD	memo on excess opacity from the existing bulk truck loadout system
08/22/90	AQD	NOV #2169-90 for 99% opacity from the existing station
09/07/90	GCC	plan to abate NOV with new DCL system; January '91 completion date
09/12/90	AQD	waiver for construction of fixed spout DCL truck loading unit
11/07/90	AQD	FY '91 Annual Report, w/ drawings and specifications of new unit
01/07/91	GCC	notice of delay until March for installation of the new system
07/03/91	GCC	notice that the new bulk truck loading station has been completed
07/17/91	GCC	application for a twin movable spout truck bulk loading station
08/02/91	AQD	waiver for construction of an additional twin spout truck station
08/09/91	GCC	implementation schedule w/ 1992 completion for new truck station

During this inspection I found that the fixed spout system was in place and worked to totally eliminate visible emissions from hatch type bulk truck trailers. I did observe that General Chemical receives open top truck trailers, however, with completely uncontrolled 100% opacity fugitive dust emissions escaping such trucks. I asked Mr. Hamel about this problem and was told that they currently have two trucking firms with open top trailers coming in, one outfit from Canada and another out of Nebraska. These trailers have pull back canvas covers, and he told me that the Canadian firm cut a three sided flap into their canvas, with velcro sealing, such that they load very similar to a hatch type truck. He told me that it is the Nebraska trucks that now load completely open and cause the problem. I asked how many of these trucks came in and Mr. Hamel told me that they constituted only a small fraction of their truck sales. I told him that the Division would be asking for a quantification of how many of these open top trucks were to be received at the loading facility and would be making decision on whether such loading would be prohibited.

Mine Shaft Construction Waiver (12/18/90)

This waiver was issued to General Chemical to allow temporary emissions from surface activities associated with the drilling of a new mine ventilation shaft, located about two miles southeast of the plant grounds. Details can be found in General Chemical's undated November, 1990 letter and in the December 18, 1990 permit waiver.

During this inspection, I had Mr. Hamel show me the site. I found the shaft completed, the hoist house constructed, and no equipment or activity at the site, other than a portable generator. Mr. Hamel told me that the electricity and mine fans are to be installed later this year, followed by final clean up, fencing and reclamation of the area. No air quality concerns are engendered by this project.

INSPECTION OBSERVATIONS:

I arrived at this plant about 9:15 am and met with Mr. Hamel to discuss outstanding issues at the plant. We talked about the issues that were raised in last year's annual inspection, including the status of the GR-III crusher permit, and installation of the new bulk truck loadout, General Chemical's fugitive dust control

programs, the ambient problems recorded in 1990 and 1991, last year's CEM data, and the progress that the company is making on implementation of their recent debottlenecking permit. All of these discussions are described more completely in specific section dealing with each issue elsewhere in this report.

The meeting lasted until the noon hour, and after lunch we went out on a tour of the plant to see what the current operating conditions were. The first stop we made was the plant crusher area. This date I found GR-I&II unit down for acid wash. GR-III was on line, but the crusher building had lost a screen around 1:00 pm, so neither crusher was operating this date. In the crusher control room, the mine ore tonnage was 0 TPH, with neither GR-I&II or GR-III taking any ore because of the screen problem. Since all of the baghouses were down, there was no opacity from any of the crusher area stacks.

This date the stockpile contained 84,028 tons of ore, as of a survey that morning. The stockpile total was up from the 30,000 tons a year ago, but down from nearly 100,000 tons in 1989. In 1988, and for the few years before that, the pile had contained only a remnant of a few thousand tons.

Because there was no ore being received from the mine, there was no ore being placed in storage and I was unable to observe the telescoping ore stacker tube in operation. Mr. Hamel told me that they formerly had a two way limit switch which not only raised the stacker as the pile was built up, but lowered it as the pile fell. He told me that since the reclaim hopper was not directly underneath the stacker, they had to raise the stacker manually to provide clearance for the bulldozer to push the pile. Because the lowering part of the system was causing them some difficulty in operating the system, they just eliminated it as unnecessary. Mr. Hamel told me that the system was much more reliable since they had done that.

From the crusher area, we went past the GR-I&II unit control room and, as I mentioned, this unit was down this date for an acid wash. Mr. Hamel told me that wash began four days earlier, on Monday of that week and would be completed in the next couple of days. Table A reflects the calciner operating conditions this date.

Table A: GR-I&II Calciner Operations

Calciner Number	Source Number	Trona Ore Feed Rate (TPH, actual)	Design Feed Rate (TPH)	Stack Opacity
1	GR-1-C	down	52.5	n/a
2	GR-1-D	down	52.5	n/a
3	GR-1-E	down	52.5	n/a
4	GR-2-C	down	52.5	n/a
5	GR-2-D	down	52.5	n/a

The dryers are also controlled from this same control room, and this date they were all down. The conversion between slurry feed rates and soda ash production is about

100 gpm of slurry per 285 TPD of soda ash (variable depending on the slurry density). The slurry feed rates in the Table B are taken from the control room instrumentation.

Table B: GR-I&II Dryer Operations

Dryer Number	Source Number	Slurry Feed (gpm reading)	Soda Ash Production (TPH as converted)	Design Production (TPH)
1	GR-1-F	down	down	33.5
2	GR-1-G	down	down	33.5
3	GR-1-H	down	down	33.5
4	GR-2-F	down	down	33.5
5	GR-2-G	down	down	33.5
6	GR-2-H	down	down	33.5

After passing the idle GR-I&II unit, we walked over to the product loadout area of the plant. There I found General Chemical loading bulk trucks with the new DCL loadout station. As discussed earlier in this report the new station worked exceptionally well on hatch type truck trailers, with no visible emissions noted. I did watch the loading of an open top trailer, however, and there was a 100% opaque dust plume emitted for the entire ± 5 minutes of loading time.

We then walked around towards the rail loadout building and found GR-2-B baghouse operating with an elevated opacity puffing in the range of 20-30%. This date I was told that this baghouse is a five compartment unit, with one of the compartments isolated and being washed out. The baghouse maintenance supervisor told me that this unit had about 40 bad bags, that they were working to change out.

From the loadout area, we went to the boiler house where I found "C" down and "D" on line at a little over 70% capacity. This date neither "A" or "B" gas fired boilers were on line. I looked at the boiler control room readings and confirmed them against the values showing on the CEM system at the plant Environmental Lab, as shown in Table C.

Table C: Coal Fired Boiler Operations

	C	D	Units
Steam Rate (actual)	down	483,000	pph
(design)	380,000	660,000	pph
Opacity Monitor (actual)	down	18.3	%
(design)	20.0	20.0	%
Oxygen Monitor	down	5.8	%
SO_2 Monitor (concentration)	down	439	ppm
(converted value)	down	1.12	lb/MM Btu
(allowable)	1.20	1.20	lb/MM Btu
NO_x Monitor (concentration)	down	320	ppm
(converted value)	down	0.60	lb/MM Btu
(allowable)	0.70	0.70	lb/MM Btu

As can be seen, "D" boiler monitors were showing compliance with all emission limits this date. The elevated opacity was caused by a soot blowing incident which occurs once per shift for around 15-30 minutes. Normal opacity is below 10%.

From the boilers, we went to the GR-III unit. At the calciner control room we found only one unit operating at a reduced capacity as shown in Table D. Calciner #1 had been off and on line all afternoon with the problems of ore supply mentioned earlier from the crusher outage.

Table D: GR-III Calciner Operations

Calciner Number	Source Number	Trona Ore Feed Rate (TPH, actual)	Design Feed Rate (TPH)	Stack Opacity
1	GR-3-D	down	131	n/a
2	GR-3-E	100	131	3-4%

Both GR-III calciner stacks have continuous opacity monitors and the opacity readings are instantaneous to compare against their 20% allowable standard. There is no strip chart to see the recent trend, and the monitor readings go directly to the Environmental Lab computer, which averages the readings, but the most current data it can print is the previous day's 24 hour average results.

In the GR-III dryer control room I found that all units were operating off stored dissolver liquor, at somewhat reduced production rates. The soda ash production figures in the table below were calculated using the same 285 TPD per 100 gpm slurry feed factor use for the GR-I&II plant production, subject to the same variability for actual slurry density. GR-III dryer operations are shown in Table E.

Table E: GR-III Dryer Operations

Dryer Number	Source Number	Slurry Feed (gpm reading)	Soda Ash Production (TPH as converted)	Design Production (TPH, maximum)
1	GR-3-K	300	35.6	40
2	GR-3-L	300	35.6	40
3	GR-3-M	310	36.8	40
4	GR-3-N	315	37.4	40
5	GR-3-P	250	29.7	40

These units' merging steam plumes showed no visible emissions after the steam dissipated.

This date General Chemical had received delivery of coal in the morning and the pile size was 5048 tons of coal after delivery, compared with 16,000 tons authorized under their 1989 coal stockpile permit waiver. General Chemical's pile size is determined by delivery and reclamation accounting records. They were building the coal pile back up this week, after having to use the pile the first part of September.

This date I noted that the plant roads were in much better shape than last year, as General Chemical has implemented a washing program over the year for improved fugitive dust control. The day was not windy, and there was misting rain for part of the afternoon, so emissions from unpaved areas were negligible. Mr. Hamel told me that they had been using the vacuum truck in the crusher area much more frequently in the past year in order to try to minimize those fugitive emissions.

We returned the office and met briefly with the new Plant Manager, Keith Clark. I summarized our previous plant status discussions for Mr. Clark, and told him that I the biggest problem facing the plant seemed to be the ambient particulate levels that had been recently been recorded and the resultant requirement for developing an effective fugitive dust control plan. I told him that plant grounds seemed to be much improved this year, but I pointed out the problem with open top trucks at the bulk truck loadout station. I told him that this was the second year in a row that GR-2-B baghouse had shown marginal opacity and that source was a concern to the Division. I told him that the Division would be reviewing the GR-I&II debottlenecking implementation plan to verify reasonable installation for the calciner opacity monitors and scrubber instrumentation, as well as to establish the source list and schedule for stack testing in the unit.

I completed this inspection and left the plant around 5:00 pm.

CONTINUOUS EMISSION MONITORING REVIEW:

System Description

Both "C" and "D" coal fired boilers have CEM systems to measure opacity, SO_2 and NO_x emissions. Opacity meters are Lear-Siegler RM-41 units reporting in % attenuation.

The gas monitor on "C" boiler is a Lear-Siegler SM-8100, while the monitor on "D" boiler is an older Lear-Siegler SM-810, both units reporting in pounds per million Btu fired. General began monitoring on these boilers in the mid-1970's, but had a difficult time obtaining and certifying reliable systems. Quarterly excess emission reports were submitted beginning in 1979, but early reports were not in a format which allowed easy analysis, thus data prior to 1985 is unreliable. Previous Annual Inspection Reports detail this history.

The two GR-III calciners (GR-3-D and GR-3-E) have been equipped with Lear-Siegler RM-41 opacity monitors for some time, but under the Administrator's September 7, 1989 order, General Chemical incorporated these monitoring systems in to their official monitoring program and began recording reportable data during the fourth quarter of 1989.

Under Permit MD-129, General Chemical is required to install opacity monitors on the five GR-I&II calciners (GR-1-C, GR-1-D, GR-1-E, GR-2-C and GR-2-D). Under their project implementation schedule, these monitors will be installed and operational by the fourth quarter of 1992.

Quality Assurance

The Division requested that General submit a Quality Assurance plan for their plant continuous monitors by letter of April 22, 1987. This plan was to be submitted by May 31st of that year. Under cover of their May 29, 1987 letter General submitted their Quality Assurance Plan which contains a commitment for quarterly alternate cylinder gas audits (CGA's) and relative accuracy audits (RAA's), with one annual relative accuracy test audit (RATA). By letter of June 11, 1987 the Division approved this QA plan. This plan was revised by General's March 22, 1988 letter, providing corrected serial numbers on the SM-810 monitors and quarterly CGA's or RAA's, per Appendix F guidelines.

The Division's September 7, 1989 order requiring incorporation of the GR-III calciner opacity monitors into General Chemical's official monitoring program, also required development and implementation of a Quality Assurance Plan for the monitoring program. By letter of November 8, 1989 General Chemical submitted their plan for these GR-III calciner opacity monitors, which included a system description; monitor calibration procedures; calibration drift assessment, adjustment and precision assessment procedures; monitor maintenance procedures and spare parts inventory list; corrective action procedures; data recording, calculations and reporting procedures; and quarterly relative accuracy audit procedures. The Division's QA coordinator reviewed this document and informed General Chemical by December 20, 1989, that it meets the Division's QA requirements. The QA plan was revised November 6, 1990, with model and serial number changes in the "C" boiler SO_2/NO_x monitor and new company contacts.

Audit Results

Table F shows last year's results of General Chemical's audits on their opacity monitors. As can be noted from the table, the monitors met the 3% allowable tolerance and passed all audits conducted during 1990.

Table F: 1990 Opacity Monitor Audit Results

Audit Quarter	Report Date	Audit Date	Calibration Error(%) L	M	H	Allowable Error (%)	Pass or Fail
			"C" Boiler				
1	04/16/89	03/29/90	+0.7	+0.7	+0.6	3	P
2	09/13/90	06/18/90	+0.4	+0.4	+0.6	3	P
3	10/02/90	09/27/90	+0.3	+0.1	+0.1	3	P
4	01/02/91	12/19/90	+0.7	+1.3	+2.3	3	P
			"D" Boiler				
1	04/16/90	03/29/90	+1.4	+1.5	+1.4	3	P
2	09/13/90	06/19/90	+0.3	+0.3	+0.1	3	P
3	10/02/90	09/27/90	+0.4	+0.1	+0.7	3	P
4	01/02/91	12/31/90	+0.5	+1.2	+1.3	3	P
			GR-3-D Calciner				
1	04/16/90	03/28/90	+1.6	+0.9	+0.9	3	P
2	09/13/90	06/18/90	+1.2	+1.2	+1.3	3	P
3	10/02/90	10/01/90	+0.4	+1.0	+1.8	3	P
4	01/02/91	12/31/90	+0.2	+0.5	+0.1	3	P
			GR-3-E Calciner				
1	04/16/90	03/28/90	+0.5	+0.4	+0.8	3	P
2	09/13/90	06/18/90	+0.6	+0.3	+1.1	3	P
3	10/02/90	10/01/90	+0.4	+0.8	+0.3	3	P
4	01/02/91	12/31/90	+0.3	+0.4	+0.5	3	P

Table G shows last year's results of General Chemical's CGA's on their boiler SO_2 monitors. As can be noted from the table, the monitors met the 15% CGA allowable relative accuracy tolerance and passed all cylinder gas audits conducted during 1990.

Table G: 1990 SO_2 Monitor CGA Results

Audit Quarter	Report Date	Audit Date	CGA Relative Accuracy (%) "C" Boiler L	"C" Boiler H	"D" Boiler L	"D" Boiler H	Allowable Relative Accuracy (%)	Pass or Fail
1	04/16/90	04/10/90	+2.5	+7.7	+9.7	+8.1	15	P
2	09/13/90	04/14/89	**RATA**		**RATA**		15	P
3	10/02/90	09/28/90	-2.9	-2.8	+4.4	-3.5	15	P
4	01/02/91	11/09/91	+4.4	-4.5	+0.6	-4.0	15	P

Table H shows last year's results of General Chemical's RATA's on their boiler SO_2 monitors. As can be noted, the boilers both met their 20% allowable relative accuracy tolerance for sulfur dioxide monitoring during the 1990 annual RATA's.

Table H: 1990 SO_2 Monitor RATA Results

Audit Quarter	Report Date	Audit Date	RATA Relative Accuracy (%) "C" Boiler ppm	"C" Boiler lb/MMBtu	"D" Boiler ppm	"D" Boiler lb/MMBtu	Allowable Relative Accuracy (%)	Pass or Fail
2	08/16/90	06/14/90	+2.5	+1.8	+5.2	+4.0	20	P

Table J shows last year's results of General Chemical's CGA's on the boiler NO_x monitors. As can be noted from the tables, the monitors met the 15% CGA allowable relative accuracy tolerance and passed all audit conducted during 1990.

Table J: 1990 NO_x Monitor CGA Results

Audit Quarter	Report Date	Audit Date	CGA Relative Accuracy (%) "C" Boiler L	"C" Boiler H	"D" Boiler L	"D" Boiler H	Allowable Relative Accuracy (%)	Pass or Fail
1	04/16/90	04/10/90	+6.2	-7.9	+9.7	+8.1	15	P
2	09/13/90	04/14/89	**RATA**		**RATA**		15	P
3	10/02/90	09/28/90	-2.8	-0.5	-3.7	-3.5	15	P
4	01/02/91	12/20/89	-6.6	-6.2	-0.7	-4.2	15	P

Table K shows last year's results of General Chemical's RATA's on their boiler NO_x monitors. As can be noted, the boilers both met their 20% allowable relative accuracy tolerance for nitrogen oxide monitoring during the 1990 annual RATA's.

Table K: 1990 NO_x Monitor RATA Results

Audit Quarter	Report Date	Audit Date	RATA Relative Accuracy (%) "C" Boiler ppm	"C" Boiler lb/MMBtu	"D" Boiler ppm	"D" Boiler lb/MMBtu	Allowable Relative Accuracy (%)	Pass or Fail
2	08/16/90	06/14/90	+15.4	+16.6	+17.6	+11.5	20	P

Compliance Rates

General Chemical began submitting EER's on the Division's current format in 1984, but because the first year's data contained interpretative errors, it has not been relied upon in the compliance analysis of the boilers. Data for 1985 to date, however, has been verified. Tables II-1 through II-8 summarize the data through the last full year for which data is currently available. Compliance rates for 1990 are:

BOILERS

	"C"	"D"
Opacity	97.5%	93.9%
SO_2	98.0%	97.2%
NO_x	99.0%	95.1%

CALCINERS

	GR-3-D	GR-3-E
Opacity	93.8%	95.7%

As can be seen, compliance rates were mostly very high in 1990 (+95%), but opacity compliance on "D" boiler slipped from 97.3% the year before, while opacity compliance on GR-3-D calciner slipped from 98.1% in 1989. The Division should request that General Chemical explain what caused this degenerative performance in 1990 and what steps have been taken to reverse this trend.

Monitor Availability

Tables II-1 through II-8 also summarize monitor availability for the period of record. Availability rates for 1990 are:

BOILERS

	"C"	"D"
Opacity	96.6%	98.5%
SO_2	97.2%	99.2%
NO_x	97.2%	99.2%

CALCINERS

	GR-3-D	GR-3-E
Opacity	99.4%	99.9%

As can be seen, monitor availability rates remain very high at General Chemical.

AMBIENT AIR MONITORING:

System Description

As shown on the attached map (figure 4), General Chemical now operates four particulate monitoring stations around the Green River Works. TSP monitoring is conducted at all four stations, with PM-10 monitoring in place at the two primary downwind monitoring stations, site #1 and site #4. Table III of this report contains a summary of the data obtained from these stations through the most current full year of data.

TSP Monitoring Results

In general, all ambient monitoring values fell in the 1975-1976 time frame after the company completed remedial dust control work the year before. Ambient concentrations remained relatively constant up until 1988, but annual averages have climbed recently. Also, 24 hour readings have shown exceedances, with sites #1 and #4 showed 24 hour TSP readings over the 150 ug/m^3 standard in 1990.

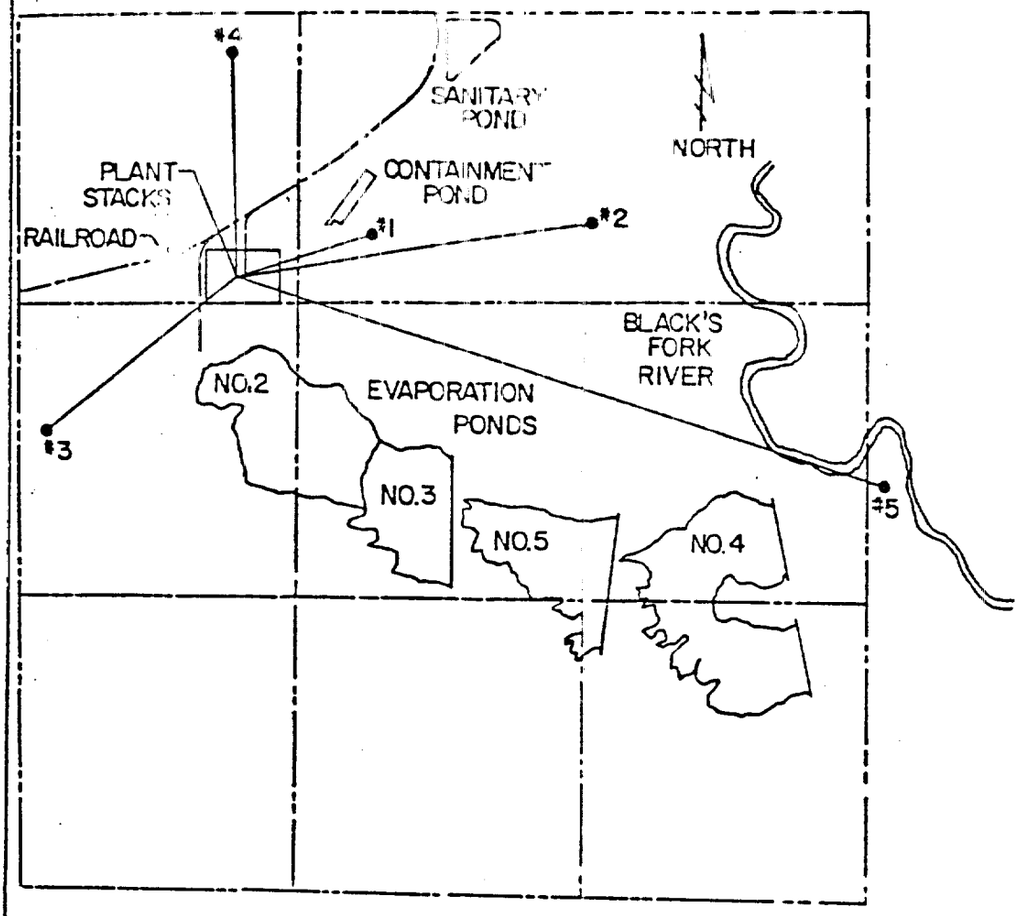
Site #1 is the closest downwind monitor, located about 0.65 miles ENE of the plant. It has recorded annual geometric means of TSP in the 40's and low 50's since 1976, but peaked at 62 ug/m^3 in 1989, before falling back to 54 ug/m^3 in 1990. The station recorded six exceedances of the 24 hour standard during the year.

Site #2 lies about 1.16 miles ENE of the plant, on approximately the same downwind vector as Site #1. Annual TSP geometric means at this site have been in the mid 30's since 1976, but peaked at 39 ug/m^3 in 1989, before falling back to 33 ug/m^3 in 1990. Site #2 recorded no exceedances of the 24 hour standard during the year.

Site #3 is General's upwind monitor, located about 1.06 miles SW of the plant. TSP average concentrations at the site have remained in the mid 20's and upper

AMBIENT AIR MONITORING NETWORK

FIGU E 4



SENSOR KEY

POSITION OF SENSOR	SENSORS	ELEV.	BEARING	DISTANCE
1	H.W	6334'	72°	0.65 MI 1.07 KM
2	H.S	6194'	80°	1.16 MI 1.87 KM
3	H	6333'	240°	1.06 MI 1.71 KM
4	H.S	6395'	349°	0.79 MI 1.27 KM
5	H	6155'	108°	2.20 MI 3.54 KM

H=HiVol W=Weather Station S= SO_2 Monitor

ALLIED CHEMICAL CORPORATION

GREEN RIVER WORKS

teens since 1976. The 1990 annual geometric mean at this site was 26 ug/m^3, up slightly from the 25 ug/m^3 average recorded the previous year. Site #3 had no exceedances of the 24 hour standard during the year.

Site #4 is located about 0.79 miles north of the plant, in a secondary downwind position. TSP geometric means here have remained in the upper 20's to mid 30's over the years, but have shown slightly higher values since 1987. The annual geometric mean at this site was 40 ug/m^3 in 1990, up slightly from the 37 ug/m^3 average recorded the previous year. The site had one exceedance of the 24 hour standard during the year.

Sulfur Dioxide Monitoring Results

Sulfur dioxide monitoring was conducted from 1974-1979 at Site #2 downwind of this plant. Annual averages were all well below the Wyoming standard and only one short term exceedance was ever recorded before monitoring was suspended. A summary of the data can be found in General's August 19, 1982 letter.

PM-10 Monitoring

During 1989 the Division reviewed General Chemical's monitoring data and found that site #4 had recorded a 24 hour reading above the PM-10 standard of 150 ug/m^3 after Wyoming adopted the new standard in February of 1989. Per the Division's policy, General Chemical was directed to add a PM-10 monitor to their monitoring network at site #4 (9/11/89 letter). As a result of the Division's ambient monitor audit earlier in the year, it was also determined that all PM-10 monitoring networks would have to incorporate at least one collocated PM-10 station to satisfy quality assurance criteria. Thus, General was required to install a second PM-10 monitor at site #4. Also, since site #1 is the site that traditionally records the highest particulate concentrations in General's network, it was determined that it would be appropriate to install another PM-10 monitor and associated equipment at site #1. Thus, General was required to operate a total of three PM-10 monitors; a collocated PM-10 sampler alongside the TSP sampler at site #4, along with a single PM-10 sampler alongside the existing TSP sampler at site #1.

PM-10 monitoring began at site #4 at the beginning of January, 1990, with PM-10 monitoring starting at site #1 during the last week of February, 1990.

At site #1, General Chemical recorded an annual arithmetic mean of 27 ug/m^3 in 1990, with no exceedances of the 24 hour standard during the year.

At site #4, General Chemical recorded an annual arithmetic mean of 19 ug/m^3 in 1990, also with no exceedances of the 24 hour standard during the year.

PM-10 / TSP Ratio

For the years that General has collected PM-10 data, the Division has determined a PM-10 to TSP ratio for those dates when concurrent samples were available at a given sampling station. Table L shows the PM-10 ratio for General Chemical's data, averaged for each available year.

Table L: General Chemical PM-10 Ratios
(% PM-10)

Year	Site #1	Site #4
1990	43.3	41.2

Everyday PM-10 Monitoring

Although the full 1991 calendar year has not been completed, General Chemical ran into trouble early in the year by recording an exceedance of the PM-10 24 hour standard in March. Telephone notification to the Division of this reading precipitated a discussion on the criteria for designating a reading as an "Exceptional Event" (4/4/91 letter) from the Division's Monitoring Supervisor, Bob Schick. General Chemical then confirmed the occurrence of the exceedance and requested that the Division accept the incident as an "Exceptional Event" (4/9/91 letter). The Division conducted a review of the documentation surrounding this date, but could not find enough justification to flag this reading. By May 6, 1991 letter Mr. Schick notified General of denial of their request and informed them that under the regulations, they must begin everyday sampling at site #1 by July, 1991. The FY '91 inspection transmittal letter (5/22/91) requested notification of start up of everyday sampling, and General responded that they expected to have a new PM-10 monitor in place at site #1 by the last part of July (7/3/91 letter). By July 30, 1991 letter, they confirmed that they had begun everyday sampling at site #1 on July 13th. Every other day sampling had been conducted at site #1, using the existing PM-10 monitor, for the first two weeks of July.

Meanwhile, General Chemical notified the Division that both sites #2 and #3 had also recorded 24 hour TSP exceedances on May 18th (6/27/91 letter). They pointed out that exceptionally high winds had occurred on that date, causing havoc throughout the Green River basin, and requested that the values be flagged so that they would not have to install PM-10 monitoring at these two sites. Their July 3rd letter provided additional documentation of wind related problems on May 18th, and by July 10, 1991 letter, the Division informed General that no additional PM-10 monitoring would be required of the Green River Works ambient network at the present time.

Complete review of 1991 monitoring data will be included in the next Annual Inspection Report.

Quality Assurance Program

By letter of November 1, 1990, General Chemical submitted their Standard Operating Procedures and Quality Assurance manual for their ambient air monitoring network. The plan was sent to the EPA for review and by January 7, 1991 letter, General was informed that the plan had received approval from that agency. By February 20, 1991 letter, General submitted some revisions to the QA/SOP plan.

The Division conducted a QA audit of the new PM-10 monitoring network at General during August of this year and found no problems with the siting or sample handling procedures (8/14/91 memo).

Ambient Report Format

During this inspection, I noted that General Chemical is still sending in monthly ambient air monitoring reports, a holdover from a very early EPA permit review at the facility. I told Mr. Hamel that the Division would prefer to have General go to quarterly ambient reports in the future. Also, I told him that the Division would require some additional information on these reports. I explained that I would want General to calculate the PM-10/TSP ratio for all dates when concurrent TSP sampling was conducted at either of the PM-10 monitoring sites. Also, I told him that the Division would require that General Chemical calculate quarterly and year-to-date averages for TSP geometric means, PM-10 arithmetic means, PM-10/TSP ratios, and track the high 24 hour value and all exceedances of the 24 hour standard on a quarterly and year-to-date basis. Confirmation of this reporting requirement will be made to General with this report's inspection transmittal letter.

FUGITIVE DUST CONTROL PLAN:

As noted in the Ambient Monitoring section of this report, General Chemical has been experiencing high ambient particulate levels in recent years. Also, one of the concerns noted in the last annual inspection report was the fact that there were heavy fugitive dust emissions from unpaved areas of the plant and a heavy accumulation of dust on plant roads contrary to the provisions of Section 25 (c) (i) of the Wyoming Air Quality Standards & Regulations. It was speculated that part of the ambient problem stemmed from a relaxation of General Chemical's fugitive dust control programs and the inspection transmittal letter requested that General Chemical report on what measures would be reinstituted to reverse this trend.

In their July 3, 1991 response, General noted that the crusher area had been cleaned up, with use of the vacuum truck continuing for cleanup on a regular basis. They stated that they no longer used a plant sweeper, but that they were washing the roads on a weekly basis during the dry season. They indicated that they were testing a soil binder on disturbed plant grounds, and that they would

be developing a long term plan for dust control at the facility, to be submitted by the end of August.

No report had been submitted so during this inspection I asked Mr. Hamel about this long term plan. He explained that General had been testing a latex binder (Nalco 8803) on two areas of the plant totalling to 2.3 acres each. He also told me that he had applied magnesium chloride road dust suppressant to about 2 miles of unpaved plant roads during the year. I explained that since fugitive dust control appeared to be critical in maintaining ambient air standards, that the Division wanted to begin quantifying General Chemical's dust control effort. To accomplish that goal, I told him that I would be requiring an annual report to address plant fugitive emission sources with a comprehensive fugitive dust control plan. This plan will consist of 1) a description of what dust control measures are planned for the coming year and 2) a report of what dust control measures were actually completed during the past year. Specific elements of the report should include:

a. a map of all trafficked roads and/or unpaved area associated with the General Chemical plant, indicating which areas will receive dust suppression treatments in the **coming year**, which areas received treatments in the **past year** and what type of treatments were applicable to these areas (ie/ revegetation, paving, chemical dust suppressants, washing, etc.),

b. for chemical dust suppression, a description of <u>what</u> dust suppressant will be used in the **coming year**, and <u>how</u> it will be applied (application rate, application frequency, dilution rate, special application procedures, scarification, etc.),

c. a list of equipment dedicated either full or part time to fugitive dust control (# water trucks, water capacity, # sweepers, # vacuum trucks, other?),

d. a watering plan with a description of what watering technique and watering frequency will be used to maintain dust control on paved and unpaved roads in the **coming year**,

e. a written plan for minimizing ore stockpile emissions using target inventories, minimized bulldozer use, and effective operation of the telescoping ore stacker in the **coming year**,

f. a quantification of how much dust suppressant (gallons, tons) was applied to roads and unpaved disturbed areas during the **previous year**, and when and where it was applied (dates, acreage treated),

g. a quantification of how much paving and revegetation was accomplished during the **previous year**, and when and where it was completed,

h. a quantification of how much watering was accomplished the previous year (gallons, if available, or water truck hours),

i. and the hours of use for street sweepers and vacuum trucks during the previous year.

This plan will be required to be submitted on an annual basis, within 60 days of the beginning of the calendar year.

MODIFIED PLANT EMISSION SOURCES:

During this inspection, Mr. Hamel told me that General Chemical had modified their soda ash process in 1989 to eliminate the product coolers from both the GR-I&II unit and from the GR-III unit. I noted that the coolers were listed as the sources leading to GR-2-J, GR-3-S and GR-3-T emission control systems, and I asked why these sources were still on the Division's emission source list. Mr. Hamel explained that they had used the systems to pick up dust at other points in the buildings and therefore, the stacks were still active. I told Mr. Hamel that it was clear that such modifications to an emission point would change the characteristics of the emission, and should have undergone a review by the Division to evaluate those emission changes. General Chemical should be officially notified that they must submit **all** changes to emission generating sources, industrial ventilation systems or control equipment of plant emission points to the Division **prior** to the execution of the plans in order to allow evaluation of the potential emissions changes and determination of resultant permitting requirements. Failure to do so could result in violation of the permitting portions of Wyoming regulations.

In order to analyze the changes made to the three cooler sources, the Division will require General Chemical to supply a report describing the changes that were made to the sources. This report should identify all changes to pickup points, pollutant capture hoods, duct work, or emission control devices. The Division will require a line diagram illustrating the revised industrial ventilation systems and will require a calculation of the revised emission rates from the stacks.

ANNUAL EMISSIONS:

Tables IV, V and VI itemize the annual emissions for this plant's point sources for total particulate, sulfur dioxide and nitrogen oxides, respectively. The calculations were made based on the latest tested or estimated hourly emission rate and on the 1990 annual hours of operation for that source as presented in General Chemical's April 16, 1991 Emission Inventory, unless otherwise noted. Thus calculated, General Chemical trona plant's emissions are:

	1989	1990
Particulate :	813 tons	798 tons
Sulfur Dioxide :	3968 tons	4340 tons
Nitrogen Oxides :	3660 tons	3672 tons

As can be noted, particulate emissions are down around 2%, reflecting slightly decreased operating hours on most plant process equipment. Sulfur dioxide emissions are up about 1%, on slightly increased coal usage over the year. Nitrogen oxide emissions are up less than 1% on slightly increased hours of operation for the boilers during the year, offsetting some calciner use reduction.

During the review of the Annual Emission Inventory it was discovered that the hours of operation reported in the CEM EER's for the GR-III calciners do not match with the hours of operation reported for these sources in the Emission Inventory. The CEM reported unit operating hours were used in these emission calculations. The Division should request General Chemical to explain which set of numbers represents the actual usage for the year.

1990 PRODUCTION:

From the Wyoming State Inspector of Mine's Annual Report, General Chemical mined 3,990,231 tons of trona in 1990. In the trona industry it takes about 1.8 tons of ore to make a ton of soda ash, therefore, for the year, this plant ran at about 101% of its current 2.2 MMTPY rated capacity for the past year.

AIR QUALITY CONCERNS:

1. As noted in this inspection report, the 1976 tests on GR-3-A were improperly used in setting a total particulate emission limit for this stack. Based on testing conducted in 1990, the Division is satisfied that GR-3-A emissions are reduced to as low as reasonably possible using the current baghouse control device. A total emission limit of 2.50 pph for this stack will accommodate the tested emissions, resulting in a negligible increase in annual emissions considered from the General Chemical plant. All other conditions of the permit have been satisfied, therefore the Division should issue the operating permit for this project, with a revised allowable mass rate of 2.50 pph, to accommodate the actual test results.

2. As described in this report, General Chemical is proposing to make modifications to their GR-III unit under permit MD-129, even though no modifications were considered in that permit analysis for that unit. The Division has requested a report on how these proposed changes would affect emissions and/or throughput in GR-III. Upon review of this report, the Division can make a final determination on whether additional permitting of GR-III modifications is necessary. If the report has not be received by the time this inspection is transmitted to General, the Division should officially inform

General Chemical that a review of GR-III activities will be necessary before such modifications can legally proceed.

3. As described in this report, the Division has completed an initial review of the activities that will be undertaken as part of the debottlenecking project permitted under MD-129. Based on this review, the following stack testing list has been compiled. General Chemical will be required to conduct testing on the five GR-I&II calciners, the six existing GR-I&II product dryers, the new IE-1 product dryer, GR-1-A in the crusher building, the three GR-I&II product screening area scrubbers, GR-2-B in the silo area, and GR-1-B(1) in the product loadout building. All testing will be Reference Method work for particulate mass rate, with NO_x mass rate testing added on the calciners. Testing for other housekeeping baghouse dust collection systems will be indefinitely postponed, unless NSPS opacity observations or other review indicates a possibility that these sources are operating outside there allowable emission limits. The Division should request General Chemical to provide a schedule for providing a test protocol and completing this testing, insuring that each scheduled test is taken after throughput increases and modifications are completed for each source.

4. As described in the report, the test list was based on information presented to date regarding modifications to the GR-I&II plant systems, with an attempt to evaluate potential emission changes from these sources. It appears, however, that there will be changes made to a number of the industrial ventilation systems on these sources, the full impact of which, cannot be yet be predicted. In order to analyze these changes, the Division will require General Chemical to supply a report listing all sources for which any changes will be made to the industrial ventilation systems leading to these stacks. If there are any changes to pickup points, pollutant capture hoods, duct work, or emission control devices, the Division will require General Chemical to supply a line diagram of the revised systems showing these changes. The diagram should show the pickup points, duct sizes, carrying velocities and volumes in each leg of the ventilation system. If General Chemical replaces or modifies any of the emission control devices, the Division will require the specifications and a drawing of the new control device (ie/scrubber, baghouse, precipitator, etc.).

5. As described in this report, in order to meet Subpart OOO requirements, General Chemical will be required to complete three hour opacity readings on the 14 dry baghouse sources subject to NSPS under this permit. The Division should request General Chemical to provide a schedule for completing these opacity readings per the protocol described in this report, insuring that each reading is taken after throughput increases and modifications are completed for each source.

6. As described in the report, General Chemical's MD-129 project implementation plan contains provisions to replace "B" boiler in 1995, with a new steam boiler package. The Division's review of MD-129 did not consider the installation of a new boiler in any fashion. General Chemical should be notified that a permit

review of this project must be completed before a new boiler can be legally installed at the plant site.

7. As described in the report, during this inspection is was observed that bulk loading of open top truck trailers causes excessive fugitive emissions. The Division should ask for a quantification of how many of these open top trucks have been received at the new truck loading facility. A decision can then be made on whether this activity can be accepted.

8. As described in this report CEM compliance rates were mostly very high in 1990, but opacity compliance on "D" boiler slipped from 97% the year before and opacity compliance on GR-3-D calciner slipped from 98% in 1989, both down to 94% for the 1990 calendar year. The Division should request that General Chemical explain what caused this degenerative performance in 1990 and what steps have been taken to reverse this trend.

9. As described in the report, General Chemical recorded six exceedances of the Wyoming 24 hour TSP standard in 1990 at site #1, with a another exceedance recorded at site #4. No PM-10 exceedances were recorded in 1990, but the company ran into trouble early in 1991 by recording an exceedance of the 24 hour standard during March at site #1 . As a result of this reading, General began everyday sampling at the #1 station during the last part of July.

One of the concerns noted in the last annual inspection report was the fact that there were heavy fugitive dust emissions from unpaved areas of the plant and a heavy accumulation of dust on plant roads contrary to the provisions of Section 25 (c) (i) of the Wyoming Air Quality Standards & Regulations. It is speculated that part of the ambient problem stemmed from a relaxation of General Chemical's fugitive dust control programs. Since fugitive dust control appears to be critical in maintaining ambient air standards, the Division will begin quantifying General Chemical's dust control effort by requiring an annual report to address plant fugitive emission sources. This comprehensive fugitive dust control plan will consist of 1) a description of what dust control measures are planned for the coming year and 2) a report of what dust control measures were actually completed during the past year. Specific elements of the report should include:

a. a map of all trafficked roads and/or unpaved area associated with the General Chemical plant, indicating which areas will receive dust suppression treatments in the **coming year**, which areas received treatments in the **past year** and what type of treatments were applicable to these areas (ie/ revegetation, paving, chemical dust suppressants, washing, etc.),

b. for chemical dust suppression, a description of what dust suppressant will be used in the **coming year**, and how it will be applied (application rate, application frequency, dilution rate, special application procedures, scarification, etc.),

c. a list of equipment dedicated either full or part time to fugitive dust control (# water trucks, water capacity, # sweepers, # vacuum trucks, other?) during the **coming year**,

d. a watering plan with a description of what watering technique and watering frequency will be used to maintain dust control on paved and unpaved roads in the **coming year**,

e. a written plan for minimizing ore stockpile emissions using target inventories, minimized bulldozer use, and effective operation of the telescoping ore stacker in the **coming year**,

f. a quantification of how much dust suppressant (gallons, tons) was applied to roads and unpaved disturbed areas during the **previous year**, and when and where it was applied (dates, acreage treated),

g. a quantification of how much paving and revegetation was accomplished during the **previous year**, and when and where it was completed,

h. a quantification of how much watering was accomplished the **previous year** (gallons, if available, or water truck hours),

i. and the hours of use for street sweepers and vacuum trucks during the **previous year.**

This plan will be required to be submitted on an annual basis, within 60 days of the beginning of the calendar year.

10. As described in this report, General Chemical is still sending in monthly ambient air monitoring reports, a holdover from a very early EPA permit review at the facility. To be consistent with other ambient reporting and to reduce the paperwork involved in this reporting, the Division will require General to go to quarterly ambient reports in the future. Also, the Division will require General to calculate the PM-10/TSP ratios for all dates when concurrent TSP sampling was conducted at the PM-10 monitoring sites. Also on future reports, the Division will require that General Chemical calculate quarterly and year-to-date averages, for TSP geometric means, PM-10 arithmetic means, and PM-10/TSP ratios, as well as track the high 24 hour value for each station and all exceedances of the 24 hour standard on a quarterly and year-to-date basis.

11. As described in this report, during this inspection, I found out that General Chemical had modified their soda ash process in 1989 to eliminate the product coolers from both the GR-I&II unit and from the GR-III unit. The removal of these coolers consists of a modification to an emission point and should have undergone a review by the Division to evaluate those emission changes. General Chemical should be officially notified that they must submit <u>all</u> changes in emission generating sources, industrial ventilation systems or plant emission

source control equipment to the Division for review prior to the execution of the plans in order to allow evaluation of the potential emissions changes and determination of resultant permitting requirements. Failure to do so could result in violation of the permitting portions of Wyoming regulations.

In order to analyze the changes made to the three cooler sources, the Division will require General Chemical to supply a report describing the changes that were made to the sources. This report should identify all changes to pickup points, pollutant capture hoods, duct work, or emission control devices. The Division will require a line diagram illustrating the revised industrial ventilation systems and will require a calculation of the revised emission rates from the stacks.

12. As described in this report, during the review of the 1990 Annual Emission Inventory it was discovered that the hours of operation reported in the CEM EER's for the GR-III calciners do not match with the hours of operation reported for these sources in the Emission Inventory. The Division should request General Chemical to explain which set of numbers represents the actual usage for the year.

COMPLIANCE STATUS:

As described above, General Chemical has recorded exceedances of Wyoming's 24 hour TSP and PM-10 standards during the past year and a half. They also have modified three cooler sources without having obtained either waiver or permit from the Division. Bulk loading of open top truck trailers causes 100% opacity from this activity. These are the only substantive issues where General Chemical was found to be in violation of any permit conditions or applicable provisions of the Wyoming Air Quality Standards & Regulations.

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-1-A	Crusher Building GR-1&2 Crusher & Screens (1968)	22,600 (24,450)	Buell-Norfelt Model 28-CE-224 Baghouse (1973)	262.5 TPH	Particulate	3.00 (7%) (opacity)	MD-129 Permit Condition	2.5	2/76		n/a
GR-1-B	Product Loadout Bin Vents & Transfer Points (1968)	16,075 (16,850)	Buell-Norfelt Model 25E-188-192 Baghouse (1974)	550 TPH	Particulate	2.28 (7%) (opacity)	MD-129 Permit Condition	0.7	7/75		n/a
GR-1-B(2)	Bulk Rail Product Loadout Building Loading Spouts & Transfer Points (1968)	8,700 (7,250)	Micropul Model 144S-10-20 TRH Baghouse (1977)	550 TPH	Particulate	1.01 (7%) (opacity)	MD-129 Permit Condition	0.1	3/77		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-1-C	#1 gas fired Calciner (1968)	80,000 (65,750)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	58 TPH	Particulate	15.00 (20%) (opacity)	MD-129 Permit Condition	7.2 (front) (half) (only)	2/77		n/a
					Nitrogen Oxides	No Reg.	10	None	n/a	n/a	6.9[3]
GR-1-D	#2 gas fired Calciner (1968)	80,000 (76,420)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	58 TPH	Particulate	15.00 (20%) (opacity)	MD-129 Permit Condition	21.2	10/76		n/a
					Nitrogen Oxides	No Reg.	10	None	n/a	n/a	6.9[3]
GR-1-E	#3 gas fired Calciner (1968)	80,000 (74,550)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	58 TPH	Particulate	15.00 (20%) (opacity)	MD-129 Permit Condition	11.9	9/76		n/a
					Nitrogen Oxides	No Reg.	10	None	n/a	n/a	6.9[4]

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-1-F	#1 Steam Tube Dryer (1968)	17,600 (16,890)	Ducon Model UW4-II/78 Wet Scrubber (1968)	33.5 TPH	Particulate	4.00 (20%) (opacity)	MD-129 Permit Condition	1.9	5/75		n/a
	m Tube Dryer (1968)	17,600 (17,590)	Ducon Model UW4-II/78 Wet Scrubber (1968)	33.5 TPH	Particulate	4.00 (20%) (opacity)	MD-129 Permit Condition	1.3	3/75		n/a
GR-1-H	#3 Steam Tube Dryer (1968)	17,600 (15,410)	Ducon Model UW4-II/78 Wet Scrubber (1968)	33.5 TPH	Particulate	4.00 (20%) (opacity)	MD-129 Permit Condition	0.9	1/75		n/a
GR-1-J(1)	Product Screening & Transfer Points (1977)	23,640 (23,110)	Ducon Model VVO 41/84 Wet Scrubber (1977)	79 TPH	Particulate	2.00 (20%) (opacity)	MD-129 Permit Condition	0.5	2/77		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-2-C	#4 gas fired Calciner (1973)	80,000 (64,056)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	39.5 TPH	Particulate	15.00 (20%) (opacity)	MD-129 Permit Condition	4.6	11/85	2/12/86	n/a
					Nitrogen Oxides	No Reg.	10	None	n/a	n/a	6.9[a]
GR-2-D	#5 gas fired Calciner (1973)	80,000 (52,889)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1973)	39.5 TPH	Particulate	15.00 (20%) (opacity)	MD-129 Permit Condition	15.91	4/83	7/10/84	n/a
					Nitrogen Oxides	No Reg.	10	None	n/a	n/a	6.9[a]
GR-2-E(1)	Dissolver #1 Vent (1968)	7,930 (7,340)	Ducon Model VVO 23/54 Wet Scrubber (1968)	95 TPH	Particulate	3.00 (20%) (opacity)	MD-129 Permit Condition	1.7	11/74		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-2-E(2)	Dissolver #2 Vent (1968)	7,930 (8,870)	Ducon Model VVO 23/54 Wet Scrubber (1968)	125 TPH	Particulate	3.00 (20%) (opacity)	MD-129 Permit Condition	1.3	10/74		n/a
GR-2-F	#4 Steam Tube Dryer (1968)	19,600 (11,925)	Ducon Model VVO 35/72 Wet Scrubber (1973)	33.5 TPH	Particulate	4.00 (20%) (opacity)	MD-129 Permit Condition	0.3	11/74		n/a
GR-2-G	#5 Steam Tube Dryer (1973)	19,600 (14,620)	Ducon Model VVO 35/72 Wet Scrubber (1973)	33.5 TPH	Particulate	4.00 (20%) (opacity)	MD-129 Permit Condition	0.5	7/74		n/a
GR-2-H	#6 Steam Tube Dryer (1973)	19,600 (11,520)	Ducon Model VVO 35/72 Wet Scrubber (1973)	33.5 TPH	Particulate	4.00 (20%) (opacity)	MD-129 Permit Condition	2.3	9/74		n/a
IE-1	#7 Steam Tube Dryer (1995)	42,600	Ducon Model VVO 48S/108 Wet Scrubber (1995)	90 TPH	Particulate	5.00	MD-129 Permit Condition	None	n/a	n/a	5.00

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-2-J	GR-1 & 2 Product ·lers & ·ening ·ents (1979)	38,600 (37,280)	Ducon Model VVO 45/102 Wet Scrubber (1979)	138 TPH	Particulate	1.50 (20%) (opacity)	MD-129 Permit Condition	0.6	7/79		n/a
GR-2-O	Lime Storage Bin Vent (1978)	440	Fuller =2FM Unifilter Model B Baghouse (1978)	20 TPH	Particulate	0.08 (20%) (opacity)	MD-129 Permit Condition	None	n/a	n/a	0.08
GR-3-A	Crusher Building GR-3 Crusher & Screens (modified) (1990)	36,690 (21,819)	Buell-Norfelt Model 40-CE-320 Baghouse (modified) (1990)	262.5 TPH	Particulate	2.00 (7%) (opacity)	MD-121 Permit Condition	2.24	9/90	12/7/90	n/a
GR-3-B	GR-3 Conveyor Transfer Building (1975)	5.600 (1,840)	Micropul Model 645-10-20TR4 Baghouse (1975)	262.5 TPH	Particulate	1.00 (20%) (opacity)	MD-129 Permit Condition	0.3	8/76		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-3-C	GR-3 Ore Gallery Transfer Points (1975)	6,000 (7,610)	Buell-Norfelt Model 8-AE-64 Baghouse (1975)	262.5 TPH	Particulate	1.00 (20%) (opacity)	MD-129 Permit Condition	0.7	5/75		n/a
GR-3-D	GR-3 #1 Calciner (1975)	168,000 (137,577)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1975)	131 TPH (120) (TPH)	Particulate	37.90 (20%) (opacity)	MD-129 Permit Condition	29.52	11/89	12/6/89	n/a
					Nitrogen Oxides	No Reg.	10	15.06	5/87	10/5/87	n/a
GR-3-E	GR-3 #2 Calciner (1975)	168,000 (143,153)	Research-Cottrell Electro-static Precipi-tator w/Buell Cyclone Precleaner (1975)	131 TPH (130) (TPH)	Particulate	37.90 (20%) (opacity)	MD-129 Permit Condition	27.06	11/89	12/6/89	n/a
					Nitrogen Oxides	No Reg.	10	8.93	2/88	3/3/88	n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-3-F	GR-3 Dissolver #1 Vent (1975)	7,750 (7,430)	Ducon Model VVO 23/54 Wet Scrubber (1975)	95 TPH	Particulate	2.00 (20%) (opacilty)	MD-129 Permit Condition	0.8	12/75		n/a
GR-3-G	GR-3 Dissolver #2 Vent (1975)	8,840	Ducon Model VVO 23/54 Wet Scrubber (1975)	95 TPH	Particulate	2.00 (20%) (opacity)	MD-129 Permit Condition	None	n/a	n/a	1.5
GF [illegible]	Filter Aid Bin Vent (1975)	660	Fuller #2FM Unifilter Model B Baghouse (1975)	10 TPH	Particulate	Nil	25 b.	None	n/a	n/a	0.11
GR-3-K	GR-3 #1 Steam Tube Dryer (1975)	18,700 (16,570)	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPH	Particulate	1.50 (20%) (opacity)	MD-129 Permit Condition	0.7	12/75		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
[illegible]	GR-3 #2 Steam Tube Dryer (1975)	18,700	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPh	Particulate	1.50 (20%) (opacity)	MD-129 Permit Condition	None	n/a	n/a	0.7
GR-3-M	GR-3 #3 Steam Tube Dryer (1975)	18,700	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPh	Particulate	1.50 (20%) (opacity)	MD-129 Permit Condition	None	n/a	n/a	0.7
3-N	GR-3 #4 Steam Tube Dryer (1975)	18,700 (12,880)	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPh	Particulate	1.50 (20%) (opacity)	MD-129 Permit Condition	0.3	6/75		n/a
GR-3-[illegible]	GR-3 #5 Steam Tube Dryer (1975)	18,700 (17,470)	Ducon Model VVO 35/72 Wet Scrubber (1975)	40 TPh	Particulate	1.50 (20%) (opacity)	MD-129 Permit Condition	0.2	5/76		n/a
GR-3-R	Dryer Vents & Tanks (1975)	17,020 (12,200)	Ducon Model VVO 35/72 Wet Scrubber (1975)	200 TPh	Particulate	2.00 (20%) (opacity)	MD-129 Permit Condition	0.7	12/75		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-3-S	GR-3 #1 Product Cooler (1975)	5,200 (7,250)	Fuller Plenum Pulse Baghouse (1975)	79 TPH	Particulate	1.00 (20%) (opacity)	MD-129 Permit Condition	0.3	10/76		n/a
GR 3-T	3 #2 duct Cooler (1975)	5,200 (5,630)	Fuller Plenum Pulse Baghouse (1975)	79 TPH	Particulate	1.00 (20%) (opacity)	MD-129 Permit Condition	0.2	1/76		n/a
GR-3-U	GR-3 Product Screening & Transfer Points (1975)	25,000 (23,630)	Buell-Norfelt Model 32-CE-256 Baghouse (1975)	79 TPH	Particulate	3.00 (20%) (opacity)	MD-129 Permit Condition	2.1	10/76		n/a
GR-3-V	GR-3 Product Screening & Transfer Points (1975)	25,000 (24,230)	Buell-Norfelt Model 32-CE-256 Baghouse (1975)	79 TPH	Particulate	3.00 (20%) (opacity)	MD-129 Permit Condition	1.2	12/75		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-9-0	Lime Storage Bin Vent (1980)	440	Fuller #2 FM Unifilter Model B Baghouse (1980)	20 TPH	Particulate	0.08 (20%) (opacity)	MD-129 Permit Condition	None	n/a	n/a	0.08
6	kpile eclaim reening & Transfer Points (1978)	20,320 (23,490)	Mikropul Model 320-10-20TRH Baghouse (1978)	800 TPH	Particulate	1.40 (7%) (opacity)	MD-129 Permit Condition	1.0	11/78		n/a
FD-612	Product Silo #4 Vent & Feed Transfer Points (1981)	16,700 (16,070)	Mikropul Model 3025-8-TRH Baghouse (1981)	700 TPH	Particulate	1.50 (7%) (opacity)	MD-129 Permit Condition	0.64	9/81	12/28/82	n/a
FD-613	Product Silo #5 Vent & Feed Transfer Points (1981)	8,750 (7,990)	Mikropul Model 1805-8-TRH Baghouse (1981)	700 TPH	Particulate	0.90 (7%) (opacity)	MD-129 Permit Condition	0.61	9/81	12/28/82	n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
FD-614	Silo #5 Reclaim Transfer Points (1981)	9,450 (9,810)	Mikropul Model 2215-8-TRH Baghouse (1981)	700 TPH	Particulate	1.00 (7%) (opacity)	MD-129 Permit Condition	0.31	10/81	12/28/82	n/a
FD-615	Silo #4 Reclaim Transfer Points (1981)	9,450 (9,850)	Mikropul Model 2215-8-TRH Baghouse (1981)	700 TPH	Particulate	1.00 (7%) (opacity)	MD-129 Permit Condition	0.44	10/81	12/28/82	n/a
FD-616	Product Loadout Conveyor Transfer House	6,800 (6,412)	Mikropul Model 1205-8-TRH Baghouse (1981)	700 TPH	Particulate	0.80 (7%) (opacity)	MD-129 Permit Condition	0.28	7/81	12/28/82	n/a
A-305	Crusher Building GR-3 Ore Screens & Transfer Points (1976)	10,000 (10,180)	Buell-Norfelt Model 32-CE-256 Baghouse (1976)	262.5 TPH	Particulate	1.51 (7%) (opacity)	MD-129 Permit Condition	0.4	2/76		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
A-309	Stockpile Ore Reclaim Screening & Transfer Points (1976)	11,200 (9,200)	Micropul Model 1215-10-20TRH Baghouse (1976)	300 TPH	Particulate	1.28 (7%) (opacity)	MD-129 Permit Condition	0.1	2/77		n/a
CH-1	Rail Unloading Building Coal Unloading & Conveyor Transfer Points (1977)	11,840 (9,200)	Carter-Day Model 72-RJ-120 Baghouse (1977)	100 TPH	Particulate	1.7 (20%) (opacity)	MD-129 Permit Condition	0.9	3/77		n/a
CH-2	Boiler House Coal Receiving & Conveyor Transfer Points (1977)	12,870 (10,570)	Carter-Day Model 72-RJ-120 Baghouse (1977)	100 TPH	Particulate	1.00 (20%) (opacity)	MD-129 Permit Condition	0.2	4/77		n/a

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
FD-120	Crusher Building Conveyor Transfer Points (1979)	12,800 (18,930)	Mikropul Model 432-K6-TRH Baghouse (1979)	262.5 TPH	Particulate	2.00 (7%) (opacity)	MD-129 Permit Condition	0.2	9/79	12/28/82	n/a
GR-1-O	"A" Boiler Gas Fired (1968)	130,000	None	267 MM Btu/Hr (0.33MM) (CF/Hr) (@ 810) (Btu/CF)	Particulate	No Reg	14 h.	None	n/a	n/a	1.7[6]
					Sulfur Dioxide	No Reg	4 e.	None	n/a	n/a	0.2[6]
					Nitrogen Oxide	61.41 (0.23) (lb/MM Btu)	10 b. (2)	None	n/a	n/a	182[3]
GR-1-P	"B" Boiler Gas Fired (1968	130,000	None	267 MM Btu/Hr (0.33MM) (CF/Hr) (@ 810) (Btu/CF)	Particulate	No Reg	14 h.	None	n/a	n/a	1.7[6]
					Sulfur Dioxide	No Reg	4 e.	None	n/a	n/a	0.2[6]
					Nitrogen Oxide	61.41 (0.23) (lb/MM Btu)	10 b. (2)	None	n/a	n/a	182[6]

TABLE 1

General Chemical Green River Works Point Source Emissions

Emission Point	Source (Date) (Installed)	Size (acfm) design (tested)	Control Equipment (Date) (Installed)	Process Rate design (tested)	Pollutant	Allowable Emissions (lb/hr)	Applicable W.A.Q.S.&R. Section	Tested Actual Emission (lb/hr)	Latest Date Tested	Test Review Date	Estimated Emission (lb/hr)
GR-2-L	"C" Boiler Coal Fired 380,000 pph Steam Rated (1974)	248,000 (247,000)	UOP Model DES-30(996) Electro-static Precipi-tator (1974)	534 MM Btu/Hr (26.7) (TPH_i) (@ 10^4) (Btu/lb)	Particulate	50.00 (20%) (opacity)	MD-129 Permit Condition	28.2	11/76		n/a
					Sulfur Dioxide	640.80 (1.20 lb) (per MM Btu)	4 e.	166 (0.26 lb) (per) (MM Btu)	12/75		n/a
					Nitrogen Oxides	375.90 (0.70 lb) (per MM Btu)	10 b. (7)	290 (0.46 lb) (per) (MM Btu)	12/75		n/a
GR-3-W	"D" Boiler Coal Fired 660,000 pph Steam Rated (1975)	377,000 (388,300)	UOP Model DES-30(999) Electro-static Precipi-tator (1975)	880 MM Btu/Hr (44.0) (TPH_i) (@ 10^4) (Btu/Lb)	Particulate	80.00 (20%) (opacity)	MD-129 Permit Condition	20.6	6/76		n/a
					Sulfur Dioxide	1056.00 (1.20 lb) (per MM Btu)	4 e.	611 (0.80 lb) (per) (MM Btu)	5/77		n/a
					Nitrogen Oxides	616.00 (0.70 lb) (per MM Btu)	10 b. (7)	506 (0.57 lb) (per) (MM Btu)	6/76		n/a

a. Estimate arrived at by backcalculating from annual emission tonnage and annual operation figures contained in 1987 emission inventory.
b. Estimate arrived at using 0.02 gr/ft^3 estimated emission rate @ design exhaust volume.
c. Estimate arrived at using measured emissions from similar plant sources.
d. Estimate arrived at using Table 1.4-1 of AP-42 "Compilation of Air Pollutant Emission Factors" for natural gas combustion.

Table II-1: CEM Data

General Chemical Company
"C" Boiler Opacity Monitor
Allowable = 20% Opacity

A = <20% Opacity
B = 20 - 25%
C = 25 - 30%
D = 30 - 35%
E = 35 - 40 %
F = 40 - 45%
G = >45% Opacity

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance A	% Monitored Time In Violation Categories B	C	D	E	F	G
1985	7464	8258	502	94.3	96.7	2.0	0.4	0.3	0.3		0.3
1986	6748	8341	419	95.2	97.6	1.4	0.3	0.2	0.2		0.3
1987	7877	8726	34	99.6	98.1	0.9	0.3	0.2	0.1	0.1	0.3
1988	8325	8712	72	99.2	98.8	0.5	0.2	0.2	0.1	0.1	0.2
1989	8260	8728	32	99.6	98.9	0.6	0.2	0.1	0.1	0.0	0.1
1990	8203	8459	301	96.6	97.5	1.3	1.4	0.3	0.1	0.1	0.2

Table II-2: CEM Data

General Chemical Company
"C" Boiler Sulfur Dioxide Monitor
Allowable = 1.2 lb/MM Btu

A = <1.2 lb/MM Btu
B = 1.2 - 1.5
C = 1.5 - 1.8
D = 1.8 - 2.1
E = 2.1 - 2.4
F = 2.4 - 2.7
G = >2.7 lb/MM Btu

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance	% Monitored Time In Violation Categories					
					A	B	C	D	E	F	G
1985	7464	7943	817	90.7	98.2	1.2	0.5	0.0	0.0	0.0	0.0
1986	6748	8317	443	94.9	99.6	0.4	0.0	0.0	0.0	0.0	0.0
1987	7877	6888	1872	78.6	99.8	0.2	0.0	0.0	0.0	0.0	0.0
1988	8325	8.689	95	98.9	99.8	0.1	0.1	0.0	0.0	0.0	0.0
1989	8260	8626	134	98.5	99.4	0.5	0.1	0.0	0.0	0.0	0.0
1990	8203	8514	246	97.2	98.0	1.1	0.3	0.4	0.1	0.0	0.0

Table 11-3: CEM Data

General Chemical Company
"C" Boiler Nitrogen Oxides Monitor
Allowable = 0.7 lb/MM Btu

A = <0.70 lb/MM Btu
B = 0.700 - 0.875
C = 0.875 - 1.050
D = 1.050 - 1.225
E = 1.225 - 1.400
F = 1.400 - 1.575
G = >1.575 lb/MM Btu

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance	% Monitored Time In Violation Categories					
					A	B	C	D	E	F	G
1985	7464	7943	817	90.7	94.6	4.7	0.7	0.0	0.0	0.0	0.0
1986	6748	8317	443	94.9	97.7	2.2	0.1	0.0	0.0	0.0	0.0
1987	7877	6888	1872	78.6	97.4	2.2	0.2	0.2	0.0	0.0	0.0
1988	8325	8689	95	98.9	99.8	0.2	0.0	0.0	0.0	0.0	0.0
1989	8260	8626	134	98.5	99.4	0.6	0.0	0.0	0.0	0.0	0.0
1990	8203	8514	246	97.2	99.0	1.0	0.0	0.0	0.0	0.0	0.0

Table II-4: CEM Data

General Chemical Company
"D" Boiler Opacity Monitor
Allowable = 20%

A = <20% Opacity
B = 20 - 25%
C = 25 - 30%
D = 30 - 35%
E = 35 - 40%
F = 40 - 45%
G = >45% Opacity

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance	% Monitored Time In Violation Categories					
					A	B	C	D	E	F	G
1985	7885	8261	499	94.3	99.0	0.3	0.1	0.1	0.2		0.3
1986	7858	8417	343	96.1	97.6	0.9	0.5	0.4	0.4		0.3
1987	8440	8677	83	99.1	95.9	2.6	0.6	0.4	0.2	0.1	0.3
1988	8351	8673	111	98.7	98.7	0.7	0.1	0.1	0.1	0.1	0.3
1989	8388	8744	16	99.8	97.3	1.7	0.5	0.2	0.1	0.1	0.2
1990	8470	8631	129	98.5	93.9	3.9	1.1	0.5	0.2	0.1	0.3

Table II-5: CEM Data

General Chemical Company
"D" Boiler Sulfur Dioxide Monitor
Allowable = 1.2 lb/MM Btu

A = <1.2 lb/MM Btu
B = 1.2 - 1.5
C = 1.5 - 1.8
D = 1.8 - 2.1
E = 2.1 - 2.4
F = 2.4 - 2.7
G = >2.7 lb/MM Btu

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance A	% Monitored Time In Violation Categories B	C	D	E	F	G
1985	7885	8076	664	92.4	97.4	2.0	0.4	0.1	0.0	0.0	0.0
1986	7858	8183	577	93.4	99.7	0.2	0.1	0.0	0.0	0.0	0.0
1987	8440	8492	268	96.9	99.9	0.1	0.0	0.0	0.0	0.0	0.0
1988	8351	8647	137	98.4	99.4	0.4	0.2	0.0	0.0	0.0	0.0
1989	8388	8647	113	98.7	98.0	2.0	0.0	0.0	0.0	0.0	0.0
1990	8470	8694	66	99.2	27.2	2.1	0.5	0.2	0.0	0.0	0.0

Table II-6: CEM Data

General Chemical Company
"D" Boiler Nitrogen Oxides Monitor
Allowable = 0.7 lb/MM Btu

A = <0.70 lb/MM Btu
B = 0.700 - 0.875
C = 0.875 - 1.050
D = 1.050 - 1.225
E = 1.225 - 1.400
F = 1.400 - 1.575
G = >1.575 lb/MM Btu

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance	% Monitored Time In Violation Categories					
					A	B	C	D	E	F	G
1985	7885	8096	664	92.4	93.7	5.2	0.7	0.4	0.0	0.0	0.0
1986	7858	8183	577	93.4	97.2	2.7	0.0	0.0	0.0	0.0	0.0
1987	8440	8492	268	96.9	94.8	4.8	0.4	0.0	0.0	0.0	0.0
1988	8351	8647	137	98.4	96.8	3.2	0.0	0.0	0.0	0.0	0.0
1989	8388	8647	113	98.7	95.8	3.9	0.3	0.0	0.0	0.0	0.0
1990	8470	8694	66	99.2	95.1	4.6	0.3	0.0	0.0	0.0	0.0

Table 11-7: CEM Data

General Chemical Company
GR-3-D #1 Calciner Opacity Monitor
Allowable = 20%

A = <20% Opacity
B = 20 - 25%
C = 25 - 30%
D = 30 - 35%
E = 35 - 40%
F = 40 - 45%
G = >45% Opacity

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance	% Monitored Time In Violation Categories					
					A	B	C	D	E	F	G
1989 (2 Mo) (only)	1417	1455	9	99.4	98.1	0.9	0.1	0.1	0.1	0.1	0.6
1990	7661	8169	291	96.7	93.8	3.9	0.4	0.4	0.3	0.2	0.6

Table II-8: CEM Data

General Chemical Company
GR-3-E #2 Calciner Opacity Monitor
Allowable = 20%

A = <20% Opacity
B = 20 - 25%
C = 25 - 30%
D = 30 - 35%
E = 35 - 40%
F = 40 - 45%
G = >45% Opacity

Reporting Year	Number of Hours Unit Operated	Number of Hours Monitor Operated	Number of Hours Monitor Unavailable	% Monitor Availability	% Monitored Time In Compliance A	% Monitored Time In Violation Categories B	C	D	E	F	G
1989 (2 Mo) (only)	1410	1463	1	99.9	97.2	0.4	0.4	0.4	0.3	0.2	0.1
1990	7676	8629	131	98.5	95.7	2.2	0.4	0.3	0.2	0.2	0.9

TABLE III-1: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#1	SW¼, Sec. 29 T19N, R109W	Oct. 1974	1974 (3 Months) (data)	69%	11	83.5	218 (151)	10/2, 10/14
			175	62%	37	101.3	468 (420)	(13 Total) 3/19, 4/25, 5/1, 7/17, 10/15, 10/21,10/27, 11/14, 11/26 12/2, 12/8, 12/14, 12/30
			1976	89%	54	51.9	170 (127)	3/7
			1977	97%	59	43.7	284 (157)	9/28, 10/4
			1978	92%	56	46.3	248 (161)	10/29, 12/4
			1979	85%	52	48.0	155 (108)	6/14
			1980	100%	61	52.6	211 (194)	6/14, 6/26
			1981	87%	53	51.2	142 (130)	None
			1982	98%	60	46.3	138 (118)	None
			1983	82%	49	42.9	189 (170)	1/6, 10/21

TABLE III-1: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#1	(continued)		1984	85%	52	56.1	188 (185)	5/30, 9/9, 10/9
			1985	100%	61	50.2	157 (135)	2/24
			1986	95%	58	39.5	205 (148)	7/31
			1987	95%	58	44.1	147 (122)	None
			1988	100%	61	53.6	396 (131)	4/3
			1989	92%	56	61.9	299 (196)	1/20, 11/22, 12/12
			1990	97%	59	54.2	211 (186)	1/23, 1/29, 10/2, 11/13, 12/7, 12/31

TABLE III-1A: PM-10 DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Annual Arithmetic Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#1A PM10	SW/4, Sec 29 T19N, R109W	2/90	1990	80%-year 92%-actual	49	27	97 (73)	None

TABLE III-2: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#2	SW¼ Sec. 28 T19N, R109W	Oct. 1974	1974 (3 Months) (data)	69%	11	91.1	351 (347)	(5 Total) 10/2, 10/8, 10/14, 10/20, 11/25
			1975	60%	36	48.7	262 (173)	5/19, 10/21
			1976	89%	54	38.2	95 (82)	None
			1977	97%	59	34.6	197 (83)	11/15
			1978	93%	57	33.6	162 (90)	10/29
			1979	85%	53	35.0	108 (69)	None
			1980	98%	60	36.0	149 (143)	None
			1981	90%	55	39.2	113 (106)	None
			1982	97%	59	33.3	87 (84)	None
			1983	70%	42	30.4	104 (99)	None
			1984	62%	38	36.9	180	5/30

TABLE III-2: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#2	(continued)		1985	100%	61	35.5	96 (87)	None
			1986	98%	60	30.1	85 (73)	None
			1987	90%	55	31.9	90 (87)	None
			1988	100%	61	33.6	233 (107)	4/3
			1989	90%	55	38.6	146 (116)	None
			1990	92%	56	32.5	103 (81)	None

TABLE III-3: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#3	NW¼, Sec. 31 T19N, R109W	Oct. 1974	1974 (3 Months) (data)	63%	10	41.8	137 (130)	None
			1975	22%	13	24.7	1004 (104)	2/11
			1976	66%	40	36.3	93 (85)	None
			1977	83%	57	26.4	106 (82)	None
			1978	97%	59	23.7	102 (88)	None
			1979	95%	58	23.5	60 (60)	None
			1980	97%	59	23.2	85 (64)	None
			1981	98%	60	28.3	102 (96)	None
			1982	98%	60	20.7	89 (75)	None
			1983	92%	55	18.2	84 (72)	None
			1984	98%	60	18.3	87 (66)	None

TABLE III-3: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#3	(continued)		1985	100%	61	22.4	102 (90)	None
			1986	98%	60	22.3	175 (78)	6/1
			1987	97%	59	28.4	138 (128)	None
			1988	97%	59	22.2	91 (72)	None
			1989	95%	58	25.0	118 (108)	None
			1990	95%	58	25.6	147 (140)	None

TABLE III-4: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#4	NE¼, Sec. 30 T19N, R109W	Oct. 1974	1974 (3 Months) (data)	63%	10	49.4	166 (108)	10/2
			1975	37%	22	30.6	142 (139)	None
			1976	90%	55	36.6	345 (153)	2/21, 4/12
			1977	100%	61	28.8	151 (114)	11/15
			1978	98%	60	31.6	224 (95)	9/5
			1979	97%	59	33.6	140 (96)	None
			1980	97%	59	36.5	147 (116)	None
			1981	98%	60	32.7	120 (106)	None
			1982	95%	58	34.7	115 (103)	None
			1983	97%	58	25.0	129 (90)	None
			1984	87%	53	26.4	97 (94)	None

TABLE III-4: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#4	(continued)		1985	97%	59	31.8	92 (88)	None
			1986	92%	56	22.7	77 (64)	None
			1987	98%	60	37.2	163 (112)	7/20
			1988	100%	61	38.5	137 (103)	None
			1989	93%	57	36.6	269 (158)	6/15, 10/25
			1990	95%	58	39.8	164 (133)	11/13

TABLE III-4A: PM-10 DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Annual Arithmetic Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#4A PM10	NE/4, Sec. 30 T19N, R109W	1/90	1990	95%	58	19	96 (62)	None

TABLE III-5: HI-VOL DATA

General Chemical Green River Works

Sampler	Location	Date Sampling Began	Collection Year	Collection Efficiency	Number of Samples Taken	Geometric Mean (ug/m^3)	1st High (2nd High) Reading (ug/m^3)	Dates of Exceedance of 24-Hr Standard
#5	SW¼, Sec. 34 T19N, R109W	Nov. 1975	1975 (2 Months) (data)	15%	9	46.2	253 (101)	11/14
			1976	72%	44	36.3	86 (83)	None
			1977	98%	60	32.9	102 (91)	None
			1978	92%	56	27.6	126 (92)	None
			1979	100%	61	29.3	91	None
			(Sampling) (Terminated) (12/79)					

Table IV
General Chemical 1990 Particulate Emissions
(Data from April 16, 1991 Emission Inventory)

Source	Latest Test (or Estimate) Date	Emission Rate (pph)	1990 Annual Operation (hours)	1990 Annual Emissior (tons)
GR-1-A	2/76	2.5	8191	10.2
GR-1-B(1)	7/75	0.7	6132	2.3
GR-1-B(2)	3/77	0.1	6132	0.3
GR-1-C	2/77	7.2	7905	29.3
GR-1-D	10/76	21.2	7905	86.3
GR-1-E	9/76	11.9	7905	48.4
GR-1-F	5/75	1.9	7629	7.2
GR-1-G	3/75	1.3	7629	5.0
GR-1-H	1/75	0.9	7629	3.4
GR-1-J(1)	2/77	0.5	7629	1.9
GR-1-J(2)	2/77	0.3	7629	1.1
GR-2-A	4/77	0.5	8191	2.0
GR-2-B	11/76	0.3	8760	1.3
GR-2-C	11/85	4.6	7905	18.2
GR-2-D	4/83	15.9	7905	62.8
GR-2-E	11/74	1.7	7905	6.7
GR-2-E(2)	10/74	1.3	7905	5.1
GR-2-F	11/74	0.3	7629	1.1
GR-2-G	7/74	0.5	7629	1.9
GR-2-H	9/74	2.3	7629	8.8
GR-2-J	7/79	0.6	7629	2.3
GR-2-O	(9/91)	0.1	0	0.0
GR-3-A	9/90	2.2	8059	8.8
GR-3-B	8/76	0.3	8059	1.2
GR-3-C	5/75	0.7	8059	2.8
GR-3-D	11/89	29.5	7676	113.2
GR-3-E	11/89	27.1	7661	103.8
GR-3-F	12/75	0.8	7563	3.0
GR-3-G	(9/91)	1.5	7563	5.7
GR-3-H	(9/91)	0.1	7	0.0
GR-3-K	12/75	0.7	8146	2.9
GR-3-L	(9/91)	0.7	8146	2.9
GR-3-M	(9/91)	0.7	8146	2.9
GR-3-N	6/75	0.3	8146	1.2
GR-3-P	5/76	0.2	8168	0.8
GR-3-R	12/75	0.7	8146	2.9
GR-3-S	10/76	0.3	8146	1.2
GR-3-T	1/76	0.2	8146	0.8
GR-3-U	10/76	2.1	8146	8.6
GR-3-V	12/75	1.2	8146	4.9
GR-3-O	(9/91)	0.1	0	0.0
RO-1	11/78	1.0	8146	4.1

Table IV Continued

Source	Latest Test (or Estimate) Date	Emission Rate (pph)	1989 Annual Operation (hours)	1989 Annual Emissior (tons)
FD-612	9/81	0.6	8760	2.6
FD-613	9/81	0.6	8760	2.6
FD-614	10/81	0.3	8760	1.3
FD-615	10/81	0.4	8760	1.8
FD-616	7/81	0.3	8760	1.3
A-305	2/76	0.4	8191	1.6
A-309	2/77	0.1	8147	0.4
CH-1	3/77	0.9	7616	3.4
CH-2	4/77	0.2	7616	0.8
FD-120	9/79	0.2	8147	0.8
GR-1-0	(9/91)	0.4	3361	0.7*
GR-1-P	(9/91)	0.4	1421	0.3*
GR-2-L	11/76	28.2	8206	115.7
GR-3-W	6/76	20.6	8470	87.2
Total				797.8

* Annual emissions calculated from fuel usage data and AP-42 emission factors for natural g combustion. Hourly emission rate back calculated from annual emissions and annu operation figures.

Table V
General Chemical 1990 Sulfur Dioxide Emissions*
(Data from April 16, 1991 Emission Inventory)

Source	Latest Test (or Estimate) Date	Emission Rate (pph)	1990 Annual Operation (hours)	1990 Annual Emissio (tons)
GR-2-L	(9/91)	408.6	8206	1676.5*
GR-3-W	(9/91)	628.9	8470	2663.5*
Total				4340.0

* Annual emissions calculated from fuel usage data and fuel sulfur content, assuming tot conversion to sulfur dioxide. Hourly emissions rate back calculated from annual emissic and annual operation figures.

Table VI
General Chemical 1990 Nitrogen Oxide Emissions
(Data from April 16, 1991 Emission Inventory)

Source	Latest Test (or Estimate) Date	Emission Rate (pph)	1990 Annual Operation (hours)	1990 Annual Emissio (tons)
GR-1-C	(9/91)	6.9	7905	27.3
GR-1-D	(9/91)	6.9	7905	27.3
GR-1-E	(9/91)	6.9	7905	27.3
GR-2-C	(9/91)	6.9	7905	27.3
GR-2-D	(9/91)	6.9	7905	27.3
GR-3-D	5/87	15.1	7676	58.0
GR-3-E	2/88	8.9	7661	34.1
GR-1-O	(9/91)	47.5	3361	79.8*
GR-1-P	(9/91)	55.3	1421	32.2*
GR-2-L	12/75	290.0	8206	1189.9
GR-3-W	6/76	506.0	8470	2142.9
Total				3673.4

*Annual emissions calculated from fuel usage data and AP-42 emission factors for natural combustion. Hourly emission rate back calculated from annual emissions and annual operat figures.

Appendix I

CEM Monitor Evaluation Worksheets

YEAR 1990
COMPANY General Chemical Soda Ash Plant
UNIT Source GR-2-[illegible] ([illegible]) Boiler
POLLUTANT Opacity

COMPLETED BY Lee [illegible]
DATE September 4, 199[illegible]

CEM MONITOR EVALUATION WORK SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
QUARTER	HOURS IN QUARTER	NUMBER HOURS UNIT OPERATED	NUMBER HOURS MONITOR OPERATED	NUMBER HOURS MONITORED COMPLIANCE (STATISTICAL SHEET)	UNIT COMPLIANCE RATE (COLUMN 5 / 4)	NUMBER HOURS MONITORED VIOLATION (STATISTICAL SHEET)	NUMBER HOURS MONITORED VIOLATION FROM EXCESS EMISSION TABLE (SHOULD CHECK WITH 7)	SUM COLUMNS 5 + 7 (SHOULD CHECK WITH 4)	NUMBER HOURS MONITOR OUTAGE FROM OUTAGE TABLE	NUMBER HOURS MONITOR TURNED OFF FROM OUTAGE TABLE	TOTAL MONITOR DOWNTIME (SUM COLUMNS 10 + 11)	MONITOR AVAILABILITY (1 minus COLUMNS [illegible])	SUM COLUMNS 4 + 12 (SHOULD CHECK WITH 3)
1	2160	2159.00	2148.70	2134.20	0.993	14.50	14.50	2148.70	11.30	0.00	11.30	0.995	2160.00
2	2184	2120.00	2037.40	1997.30	0.980	40.10	40.10	2037.40	146.[illegible]	0.00	146.[illegible]	0.933	2184.00
3	2208	2204.00	2198.20	2164.90	0.985	33.30	33.30	2198.20	9.80	0.00	9.80	0.996	2208.00
4	2208	1917.00	2074.60	1949.80	0.940	124.80	124.80	2074.60	133.40	0.00	133.40	0.940	2208.00
YEARLY TOTAL	8760	82[illegible].00	8459.40	8246.70	0.975	212.70	212.70	8459.40	300.60	0.00	300.60	0.966	8760.00

VIOLATION CATAGORIES	B	113.20	0.013
	C	33.60	0.004
	D	28.50	0.003
	E	11.50	0.001
	F	8.20	0.001
	G	16.70	0.002

MONITOR RELIABILITY = 1.0 - (total column 10 / total column 3) = 0.96[illegible]

YEAR 1990
COMPANY General Chemical Soda Ash Plant
UNIT Source SR-3-w [illegible]
POLLUTANT Opacity

COMPLETED BY Lee Gribovicz
DATE September 4, 1991

CEM MONITOR EVALUATION WORK SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
QUARTER	HOURS IN QUARTER	NUMBER HOURS UNIT OPERATED	NUMBER HOURS MONITOR OPERATED	NUMBER HOURS MONITORED COMPLIANCE STATISTICAL SHEET	UNIT COMPLIANCE RATE COLUMN 5 ÷ 4	NUMBER HOURS MONITORED VIOLATION (STATISTICAL SHEET)	NUMBER HOURS MONITORED VIOLATION FROM EXCESS EMISSION TABLE (SHOULD CHECK WITH 7)	SUM COLUMNS 5 + 7 (SHOULD CHECK WITH 4)	NUMBER HOURS MONITOR OUTAGE FROM OUTAGE TABLE	NUMBER HOURS MONITOR TURNED OFF FROM OUTAGE TABLE	TOTAL MONITOR DOWNTIME SUM OF COLUMNS 10 + 11	MONITOR AVAILABILITY 1 - COLUMNS 12 / 2	SUM COLUMNS 9 + 12 SHOULD CHECK WITH 2
1	[illegible]	2106.00	2148.50	[illegible]	.987	23.00	23.00	2148.50	11.50	0.00	11.50	0.995	[illegible]
2	2184	2024.00	2114.20	2045.[illegible]	.967	69.10	69.10	2114.20	69.80	0.00	69.80	0.968	2184.00
3	2208	2160.00	2206.60	1935.20	0.877	271.40	271.40	2206.60	1.40	0.00	1.40	0.999	2208.00
4	2208	2167.00	2161.20	2002.70	0.927	158.50	158.50	2161.20	46.80	0.00	46.80	0.979	2208.00
YEARLY TOTAL	8760	8470.00	8630.50	8103.50	0.939	527.00	527.00	8630.50	129.50	0.00	129.50	0.985	8760.00

VIOLATION CATAGORIES

B	323.50	.039
C	97.50	.011
D	44.50	.005
E	15.50	.002
F	11.50	.001
G	34.00	.004

MONITOR RELIABILITY = 1.0 - total column 10 / total column 2 = 0.985

Year 1990
COMPANY General Chemical Soda Ash Plant
UNIT Source GR-D-A (ID Boiler)
POLLUTANT Sulfur Dioxide

COMPLETED BY Joe Driscoll
DATE September 4, 1991

CEM MONITOR EVALUATION WORK SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
QUARTER (1,2,3,4)	HOURS IN QUARTER (HR)	NUMBER OF HOURS UNIT OPERATED (HR)	NUMBER OF HOURS MONITOR OPERATED (HR)	MONITOR AVAILABILITY (%) (4/3 * 100)	NUMBER OF HOURS MONITOR DOWN FOR CALIBRATION (HR)	NUMBER OF HOURS MONITOR DOWN FOR REPAIR (HR)	NUMBER OF HOURS MONITOR DOWN FOR VIOLATION (HR)	SUM (5 + 6 + 7 + 8) (HR)	NUMBER OF HOURS MONITOR DOWN FOR OTHER (HR)	NUMBER OF HOURS MONITOR DOWN FOR OTHER (HR)	TOTAL MONITOR DOWNTIME (9 + 10 + 11) (HR)	MONITOR RELIABILITY (%) (100 - 12)	SUM OF EMISSIONS (LB)
1	2184	2136.00	2147.00	100.51	11.00	65.00	66.00	2147.00	15.00	0.00	15.00	99.31	2151.00
2	2184	2024.00	2149.00	106.08	0.00	44.00	44.00	2149.00	35.00	0.00	35.00	98.39	2184.00
3	2208	2211.00	2194.00	99.23	0.00	0.00	0.00	2194.00	14.00	0.00	14.00	99.36	2208.00
4	2208	2167.00	2204.00	101.71	0.00	111.00	111.00	2204.00	4.00	0.00	4.00	99.82	2208.00
YEARLY TOTAL	8760	8478.00	8694.00	102.55	11.00	265.00	265.00	8694.00	66.00	0.00	66.00	99.24	8751.00

VIOLATION DATA SUMMARY			
	1	179.00	0.021
	2	47.00	0.005
	3	17.00	0.002
	4	0.00	0.000
	5	0.00	0.000
	6	0.00	0.000

MONITOR RELIABILITY = 1.0 - (total column 10 / total column 3) = 0.992

YEAR: 1990
COMPANY: General Chemical Soda Ash Plant
UNIT: Source 3R-3-4 ("D" Boiler)
POLLUTANT: Nitrogen Oxides

COMPLETED BY: Lee Driscoll
DATE: September 4, 1991

CEM MONITOR EVALUATION WORK SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
QUARTER	GROSS UNIT OPERATING HOURS THIS QUARTER	GROSS UNIT LOAD THIS QUARTER (1000 LBS)	GROSS UNIT STEAM GENERATION THIS QUARTER (1000 LBS)	AVERAGE EMISSION RATE (LB/MMBTU)	EMISSION LIMIT (LB/MMBTU)	MAXIMUM POTENTIAL EMISSIONS THIS QUARTER (TONS)	MAXIMUM ALLOWABLE EMISSIONS THIS QUARTER (TONS)	MAXIMUM EXCESS EMISSIONS THIS QUARTER (TONS)	MAXIMUM PERCENT EXCESS EMISSIONS THIS QUARTER	TOTAL MONITOR DOWNTIME THIS QUARTER (HRS)	MONITOR AVAILABILITY THIS QUARTER (%)	UNIT OPERATING TIME THIS QUARTER (%)
	SO2 LBS/MMBTU	NOX LBS/MMBTU	NOX LBS/MMBTU	NOX LBS/MMBTU	NOX LBS/MMBTU	NOX TONS	NOX TONS	NOX TONS	%	HRS	%	%
	IN	UNIT	MONITOR	COMPLIANCE STATISTICAL SHEET	RATE	EQUATION 4	EQUATION 5	EQUATION 6	EQUATION 7	EQUATION 8	EQUATION 9	EQUATION 10
1	1150	2136.00	2147.00	1089.00	0.979	55.00	55.00	2147.00	0.00	0.00	0.000	100.00
2	1184	2024.00	2.49.00	2.34.00	0.979	45.00	45.00	2149.00	25.00	0.00	25.00	0.994	2184.00
3	1208	2150.00	2194.00	1984.00	0.904	210.00	210.00	2194.00	14.00	0.00	14.00	0.994	2208.00
4	2208	2150.00	2204.00	2091.00	0.949	110.00	110.00	2204.00	4.00	0.00	4.00	0.996	2208.00
YEAR: TOTAL	8750	8470.00	8694.00	8268.00	0.951	420.00	420.00	8694.00	20.00	0.00	20.00	0.997	8750.00

VIOLATION CATAGORIES	B	401.00	4.5%	
	C	22.00	0.25%	
	D	0.00	0.00%	MONITOR RELIABILITY = 1.0 - (total column C / total column B) = 0.99%
	E	0.00	0.00%	
	F	0.00	0.00%	
	G	0.00	0.00%	

YEAR 1990 COMPLETED BY Lee Srisavice

COMPANY General Chemical Soda Ash Plant DATE September 4, 1991

UNIT Source GR-3-3 (GR-3 at Calciner) CEM MONITOR EVALUATION WORK SHEET

POLLUTANT Opacity

1	2	3	4	5	6	7	8	9	10	11	12	13	14
QUARTER	AVERAGE OPERATING HOURS	ALLOWABLE HOURS	NUMBER HOURS MONITORED	NUMBER HOURS COMPLIANCE STATUS	UNIT COMPLIANCE RATE	NUMBER HOURS MONITORED DURING STARTUP/SHUTDOWN	NUMBER HOURS MONITOR FAILED	OUT OF CONTROL (3 + 7)	NUMBER HOURS MONITOR OPERATED	NUMBER HOURS MONITOR DOWNTIME	MONITOR AVAILABILITY %	DUR. COMPL. (4 + 12)
1	2160	1728.00	2080.80	2080.80	1.000	49.00	49.00	2080.80	78.50	0.00	96.33	1.000	2160.00
2	2184	1747.20	2050.40	2050.40	1.000	125.00	125.00	2050.40	157.60	0.00	93.87	1.000	2184.00
3	2208	1766.40	2175.40	2080.80	0.956	90.00	90.00	2170.40	28.60	0.00	98.30	0.956	2208.00
4	2208	1766.40	2184.00	1924.60	0.881	185.40	185.40	2109.40	89.00	0.00	85.00	0.881	2184.00
YEAR													
TOTAL	8760	7008.00	8490.20	8096.70	0.954	522.00	522.00	8618.20	353.70	0.00	97.03	0.954	8736.00

	E	215.60	0.059
VIOLATION	I	30.70	0.004
CATAGORIES	J	32.20	0.004
	K	17.70	0.002
	F	17.50	0.002
	G	30.30	0.004

MONITOR RELIABILITY = 1.0 - (total column 10 / total column 3) = 0.961

YEAR 19[illegible]
COMPANY General Chemical Soda Ash Plant
UNIT Source GR-3-E (GR-? #2 Calciner)
POLLUTANT OPACITY

DEQ MONITOR EVALUATION WORK SHEET

COMPLETED BY Lee Gribovicz
DATE September 4, 19[illegible]

1	2	3	4	5	6	7	8	9	10	11	12	13	14
QUARTER	HOURS IN QUARTER	NUMBER HOURS UNIT OPERATED	NUMBER HOURS MONITOR OPERATED	NUMBER HOURS MONITORED COMPLIANCE STATISTICAL SHEET	UNIT COMPLIANCE RATE COLUMN 5 / 4	NUMBER HOURS MONITORED VIOLATION STATISTICAL SHEET	NUMBER HOURS MONITORED VIOLATION FROM EXCESS EMISSION TABLE (SHOULD MATCH WITH 7)	SUM COLUMNS 5 + 7 (SHOULD MATCH WITH 4)	NUMBER HOURS MONITOR OUTAGE FROM OUTAGE TABLE	NUMBER HOURS MONITOR TURNED OFF FROM OUTAGE TABLE	TOTAL MONITOR DOWNTIME SUM COLUMNS 10 + 11	MONITOR AVAILABILITY 1 - COLUMNS 12 / 2	SUM COLUMNS 4 + 12 (SHOULD EQUAL WITH 2)
1	2160	1951.50	[illegible]	[illegible]	0.957	21.10	21.10	2106.30	53.40	0.00	53.40	0.975	[illegible]
2	2184	1840.50	2124.[illegible]	1969.90	0.922	154.[illegible]	154.30	2124.[illegible]	59.30	0.00	59.30	0.9[illegible]	2184.[illegible]
3	2208	1884.00	2201.[illegible]	2131.[illegible]	0.968	70.[illegible]	70.[illegible]	2201.30	[illegible]	[illegible]	[illegible]	0.997	2208.[illegible]
4	2208	1957.50	2206.20	2098.80	0.951	107.40	107.40	2206.20	1.80	0.00	1.80	0.999	2208.00
YEARLY TOTAL	8760	7675.50	8629.30	8259.30	0.957	370.00	370.00	8629.30	130.70	0.00	130.70	0.985	8760.00

	B	185.60	0.022
VIOLATION	C	27.40	0.004
CATAGORIES	D	30.20	0.003
	E	20.70	0.002
	F	18.00	0.002
	G	77.10	0.009

MONITOR RELIABILITY = 1.0 - total column 12 / total column 3 = 0.983

Appendix II

1990 Coal Stockpile Activity Report

Memorandum

General Chemical

Date: January 10, 1991

To: Gary Merkis

From: Dave Hamel

Re: Coal pile activity 1990

The attached data summarizes the coal pile activity for 1990.

MONTH	TONS TO PILE	TONS FROM PILE	MONTH END INV.
JANUARY	246	0	7146
FEBRUARY	540	0	7686
MARCH	82	200	7568
APRIL	0	220	7348
MAY	120	930	6538
JUNE	3243	820	8961
JULY	7920	214	16667
AUGUST	240	6186	10721
SEPTEMBER	0	4186	6535
OCTOBER	1260	1523	6272
NOVEMBER	1000	5820	1452
DECEMBER	4080	3692	1840
TOTAL FOR 1990	18,731.00	23,791.00	

The pile activity in May resulted during the Memorial Day weekend, 810 tons were reclaimed to maintain boiler fuel during the long weekend. Consumption in June is on the 3rd, where 820 tons was necessary to keep things going during a regular weekend.

The increases in inventory seen during June and July result from preparation for labor negotiations during the year. This increase was conducted with the knowledge of the DEQ/AQD. The increases in consumption during August and September follow our agreement with the union, and complying with a DEQ request to return the pile inventory to a permitted quantity.

Activity in October for coal to the boiler is primarily from the three day weekend (hunting holiday) when 1148 tons was needed to keep the powerplants operating. The remainder 375 tons occurred on the 7th during a regular weekend.

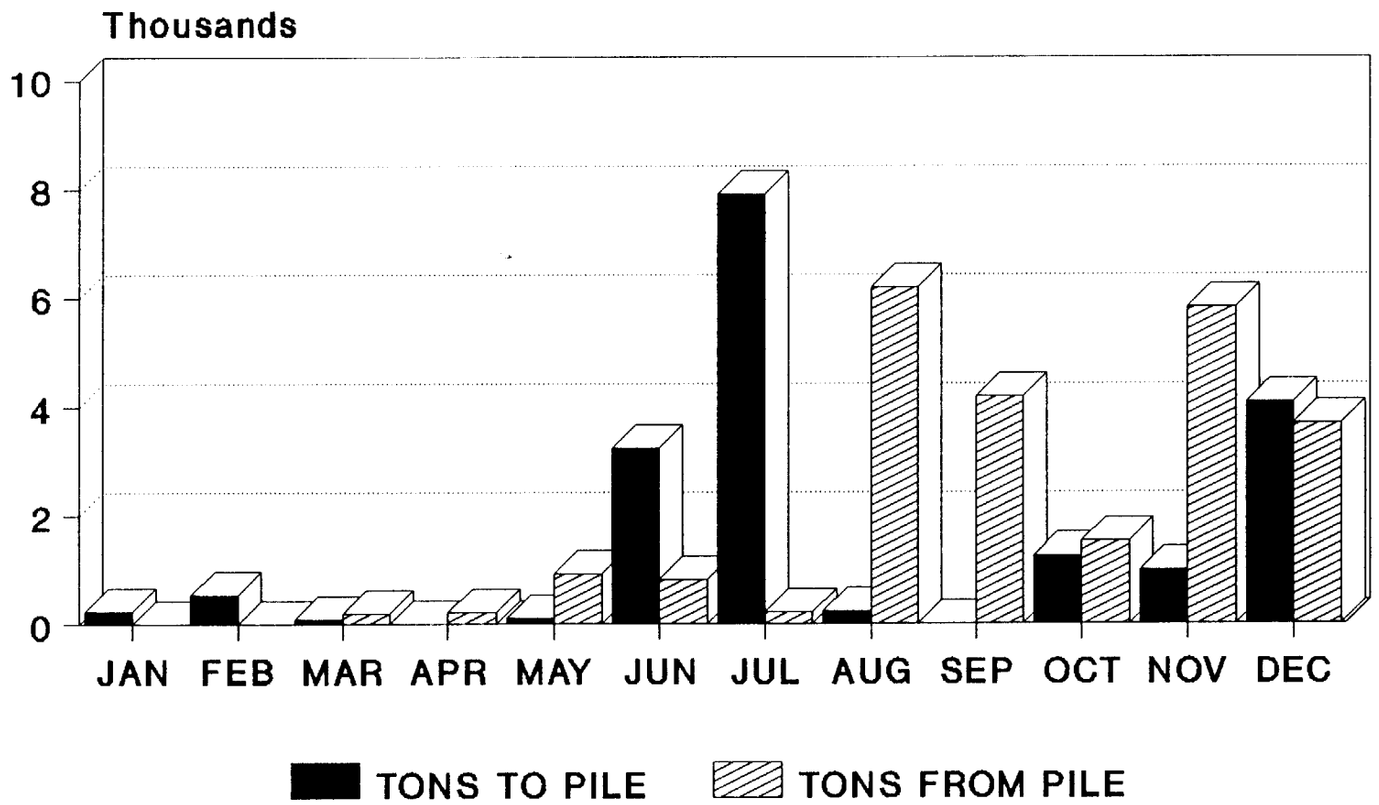
November activity resulted from a regular weekend shortage (650

tons) on the 11th and the long Thanksgiving weekend (4320 tons). The pile hit the lowest inventory of 626 tons total on November 26,1990. December activity for reclamation from the pile began on the 19th, due to the weather conditions and the Christmas holiday, which consumed 3692 tons and almost exhausted our inventory by year end. In all cases, coal additions to the pile are justifiable actions to return pile inventory to the permitted level, excepting the inventory buildup for insurance during the labor negotiations. The activity on the regular weekends can usually be traced to a problem with the carrier (BTI) or the coal mine silo operation.

DBH

cc
Joe Goich
Fred Wehe

MONTHLY PILE ACTIVITY
1990



January 1990

Coal Inventory on
Stockpile 6900.24 Tons

Jan 4, 1990
81.54 tons to pile.
Jan 18, 1990
164.55 tons to pile.

Inv. as of Jan 18, 1990
7,146.33 Tons on pile.

Feb 2, 1990
360 Tons to pile
Feb 4, 1990
180 Tons to pile.

Inv. as of Feb. 4, 1990
7,326.33 Tons on pile.

March 3, 1990
82 Tons to pile
7,408.33 Tons on pile

March 26, 1990
200 Tons to Bunkers from pile

Inventory on pile 7,208.33

April 27, 1990
220 Tons to Bunkers from pile

Inventory as of 4-3-90
6,988.33 Tons on pile.

May. 5, 1990
120 Tons to pile

Inventory as of 5-5-90
7,108.33

May. 13, 1990
120 Tons off pile to Bunkers

Inventory as of 5-13-90
6,988.33 Tons on pile

May 28, 1990
810 Tons off pile to Bunkers

Inventory as of 5-29-90
6,178.33 Tons on pile

June 3, 1990
820.33 Tons off pile to Bunkers

Inventory as of 6-3-90
5,358 Tons on pile.

June 7, 1990
394 Tons to pile.

June 8, 1990
287 Tons to pile.

June 9, 1990
122 Tons to pile.

Inventory as of 6-9-90
6,161 Tons on pile.

June 22, 1990
120 Tons to pile

June 23, 1990
300 Tons to pile

Inventory as of 6-23-90
6,581 Tons on pile.

June 27, 1990

440 Tons to Pile.

7,021 Tons on Pile.

June 28, 1990 – June 30, 1990

1580 Tons to Pile.

Inventory as of 6-30-90

8,601 Tons on Pile.

July 2, 1990

240 Tons to Pile

July 3, 1990

120 Tons to Pile

July 5, 1990

640 Tons to Pile

July 6, 1990

600 Tons to Pile

Inv. as of July 6, 1990

10,201 Tons on Pile.

July. 9th – 13th, 1990
4,240 Tons o to Pile.

Inv. as of 7-13-90
14,441 Tons on pile.

July. 16, 1990
214 Tons to Bunkers

Inv. as of 7-16-90
14.227 Tons on pile.

July. 17 – 19
1,760 Tons to pile.

Inv. as of July 19, 1990
15,987 Tons on pile

July 27, 1990
320 Tons to pile

Inv. 16,307

Aug 1 – 5 1990
2748 Tons to Bunkers

Inv. 13,559

Aug 11th - 13th 1990
3438 Tons to Bunkers

Inv. 10,121 Tons.

Aug 18, 1990
240 Tons to Pile

Inv. 10,361 Tons.

Sep 1, 2, 3rd 1990
1782 Tons to Bunkers

Inv 8,579 Tons.

Sep 5, 1990
874 Tons to Bunkers

Inv. 7705

Sep 8, 1990
277 Tons to Bunkers

Inv. 7428 Tons

Sep 16, 1990
879 Tons to Bunkers

Inv. 6549 Tons.

Sep 23, 1990
374 Tons to Bunkers

Inv. 6,175 Tons.

Oct 7, 1990
375 Tons to Bunkers

Inv. 5800 Tons.

Week of Oct 8, 1990
980 Tons to Pile.

Inv. 6780 Tons.

Oct 15, 1990
1148 Tons to Bunkers

Inv. 5,632

Oct 29, 1990
280 Tons to Pile

Inv 5,912 as of 10-31-90

Nov 2, 1990
160 Tons to pile

Inv 6.072

Nov 7, 1990
40 Tons to pile

Inv 6.112

Nov 11, 1990
650 Tons to Bunkers

Inv. 5462

Nov 12, 1990
450 Tons to Bunkers

Inv. 5,012

Nov 22, 23rd and 25th
4,320 Tons to Bunkers

Inv. on Stockpile as of
Nov 26, 1990
692 Tons.

Nov 29, 1990
240 Ton to pile

Inv 932 Tons.

Nov 30, 1990
560 Ton's to pile.

Inv 1492 Tons on pile.

Dec 4, 1990
320 Tons to pile.

Inv. 1,812 Tons on pile.

Dec. 5, 1990
600 Ton's to pile.

Inv. 2412 Tons on pile.

Dec 6, 1990
640 Ton's to pile

Inv 3,052 Tons on pile
as of Dec 6, 1990

Dec 7, 1990
440 Tons to pile

Inv 3492 Tons on pile
as of Dec 7, 1990

Dec 11, 1990
480 Tons to pile

Inv. 3,972 Tons on pile
as of Dec 11, 1990

Dec 12, 1990
440 Tons to pile

Inv. 4,412 Tons on pile
as of Dec 12, 1990

Dec 13, 1990
360 Tons to pile

Inv 4,772 Tons on pile
as of Dec 13, 1990

Dec 14, 1990
440 Tons to Pile

Inv 5,212 Tons on pile
as of Dec 14, 1990

Dec 19, 1900
150 Tons to Bunkers

Inv 5,062 Tons on pile
as of Dec 19, 1990.

Dec 22nd 1990
552 tons to Bunkers

Inv 4510 Tons on Pile.

Dec 23, 1990
864 Tons to Bunkers

Inv. 3646 tons on pile

Dec 24, 1990
926 Tons to Bunkers

Inv. 2720 tons on pile

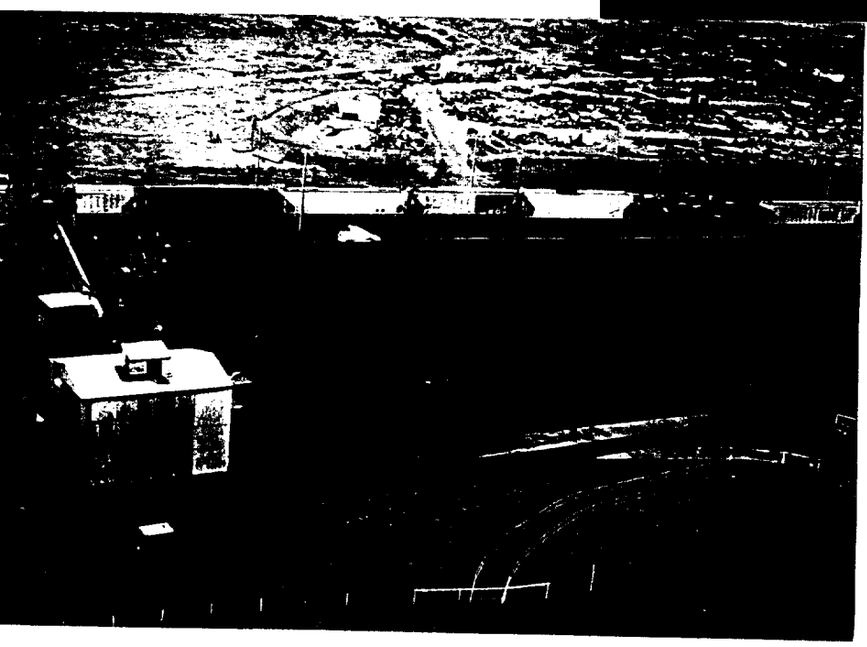
12

Dec 25, 1990
1200 Tons to Bunkers
Inv 1520 Tons on Pile.

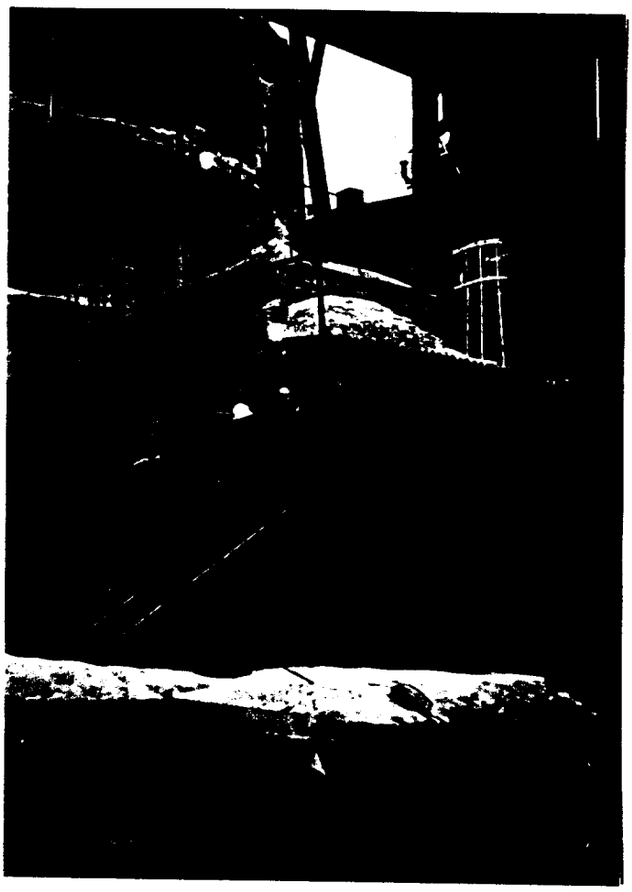
Dec 28, 1990
360 Tons to Stock Pile.
Inv 1880 Tons on Pile.

[illegible] & camp ore stockpile
[illegible] from working bulldozer)
[illegible] tons this morning

looking @ shift's barracks
(putting train shower + [illegible] coal
[illegible] by water background)

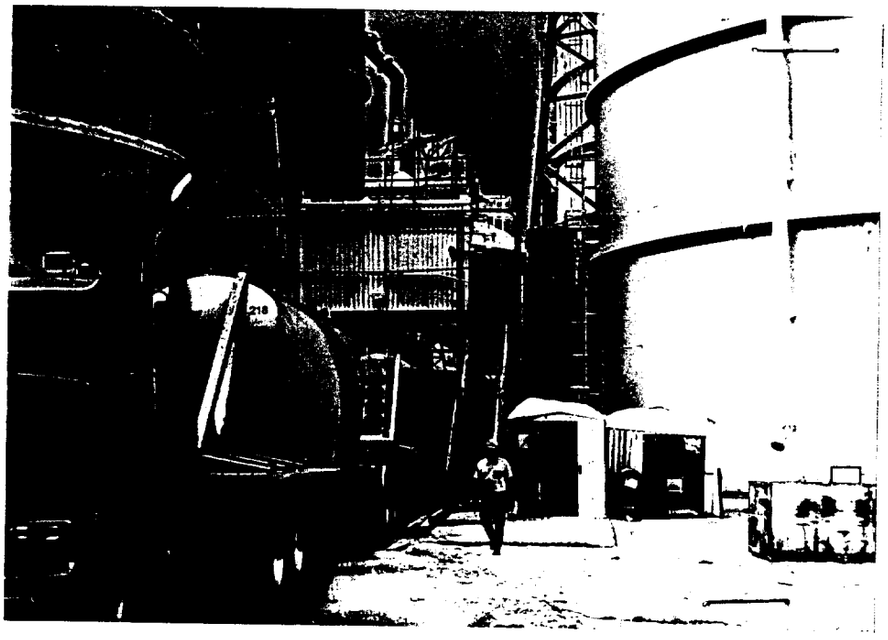


looking north @ reserve coal stockpile
([illegible] tons as of this morning)



loading a tank trailer with fully loaded trailer

note smoke and exiting the top of the dust collector.
No visible emissions



system loads hatch type trailers with no visible emissions