A. F. MEYER AND ASSOCIATES, INC.

ENVIRONMENTAL, NOISE, AND OCCUPATIONAL HEALTH CONSULTANTS

DOE/ET/13557-19

Report on SARS Backfit Evaluation
Catalytic, Inc.
Solvent Refined Coal Pilot Plant
Wilsonville, Alabama

by

Alvin F. Meyer, Jr. P.E.

July 2, 1980

Prepared for

Office of Assistant Secretary for Fossil Energy

U. S. Department of Energy

under

Contract DE-AC02-ET-13557.A001

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DISCLAIMER

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Washington, D.C.

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A. F. Meyer and Associates, Inc.

Alvin F. Meyer, Jr.
Project Manager

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Distribution

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Report on SARS Backfit Evaluation

Catalytic, Inc.

Solvent Refined Coal Pilot Plant

Wilsonville, Alabama

PURPOSE OF THE REPORT

This report provides information on results of a site visit to Catalytic, Inc. Solvent Refined Coal Pilot Plant at Wilsonville, Alabama, April 10, 1980. That site visit was made in company with the DOE-OPTA-EA Safety and Health Official, and was for the purpose of providing that official with technical assistance in evaluating the validity of an earlier DOE-OPTA recommendation exempting this facility from the Safety and Analysis and Review "backfit" requirements of DOE Order 5481.1. A further purpose of the visit was to assess and evaluate the occupational safety and health program at this facility, as compared with the criteria and guidelines contained in ASFE Order 5481.1.

SUMMARY OF OBSERVATIONS AND CONCLUSIONS

Adequate documentation regarding compliance with codes, standards, and regulations were observed at this facility. There is in existence an ongoing continuous safety analysis effort for both modifications or additions to this facility. Adequate environmental safeguards and plans and procedures were observed. The SARS backfit exemption is appropriate. The occupational safety and health program is in many ways a model for the scope of work and nature of hazards involved,

and is consistent with the ASFE guidelines and statutory requirements.

PERTINENT OBSERVATIONS AND FINDINGS

General Observations

This facility has been well manned with a view towards ease of maintenance and control of stills. It has been operating in a research mode for several years and is apparently producing six tons per day of solid SRC product. The health and safety program has been in effect since the plant started and has been updated with recommendations provided by consultant in 1976 and further refined in 1978 under the guidance of the Corporate Medical Director and staff of Air Products and Chemicals, Inc. (Catalytic, Inc.'s parent company). A high degree of order and cleanliness; of compliance with requirements for identification of hazards and hazardous areas was observed. Examples are provided in photographs contained in Appendix I.

Environmental (Air and Water) Compliance

Information was obtained that effluence from this facility conformed to EPA and State of Alabama Water Quality Commission requirements. An effluence sampling program is in effect. The spill control plan requires that a staff manager who understands the requirements be available at each shift and on weekends and holidays. A program for periodic air monitoring is in effect (performed by Air Products, Inc.). All samples to date have more than met air quality control requirements. U.S. Public Health Service-NIOSH contractor (enviro-control) has conducted

an extensive air sampling program at this facility with satisfactory results. Adequate documentation on radioactive sources was observed.

Safety Analysis Procedures

This facility has established a Safety Analysis Committee, which antedates the requirements of DOE Order 5481.1. Membership on this committee consists of the Safety Superintendent, the Project Superintendent and Project Engineer for the particular project, the Instrument Superintendent, Maintenance Superintendent, Product Superintendent, Laboratory Superintendent, the Technical Support Superintendent. The Plant Manager participates.

Each section of a process is subject to review using a "what can happen" type of approach (a modified form of failure mode and effect analysis (FMEA). When a safety analysis of a proposed modification of a new component or facility element is completed, it is submitted to the Plant Manager and following approval, is forwarded to the design group. A follow up is made by the Safety Superintendent to assure that recommendations are followed. If not, the Plant Manager is informed. Representative examples of work of the Safety Analysis Committee were examined and found to be adequate.

Occupational Safety and Health

A vigorous occupational safety and health program has been implemented at this facility. Representative samples of the documentation, guidance and other instructions, and other relevant materials are provided at Appendix II. Observations made during

the course of this site visit indicate that these requirements are in fact being followed. Principal among the materials provided in the Appendix are:

- Wilsonville Hygienic Program--describes the requirements of the company, what the company provides, discusses employees' responsibilities, and in effect provides a checklist for employee safety.
- Safety Meeting Plan Format--this Safety Meeting Plan Format is used for the monthly safety meetings held in each subwork unit.
- Sample Report of Safety Activities--in addition to providing an example of the scope of activity of the safety committees, this exhibit provides information on the attention being paid to medical statistical data.
- First Day Orientation New Employee--this item shows the emphasis on safety utilized in the job orientation for new employees.
- Emergency Procedure Fire Explosion.
- Safety Equipment Required for Plant Sampling (See photograph in Appendix I which shows compliance with these requirements).
- Hazardous Materials Index--this is a copy of the hazardous Materials Index maintained in the Safety Office elsewhere throughout the plant.

- Report on Arsenic Monitoring--an example of the type of environmental surveyance being provided by Air Products, Inc.

Medical Survellince

A pre-employment physical is provided for all new employees. A yearly mandatory annual physical is also provided. The Corporate Medical Department of Air Products, Inc. is responsible for the medical program. A toxicological testing program is also in effect. Review of the information on medical records indicates that there have been no cases of dermatitis in this plant. There has been heavy emphasis on personal hygiene in worker education. The company is in the process of constructing a new change house (it currently provides a change of work clothes each day to its employees).

CONCLUSIONS

Safety Analysis and Review Requirement

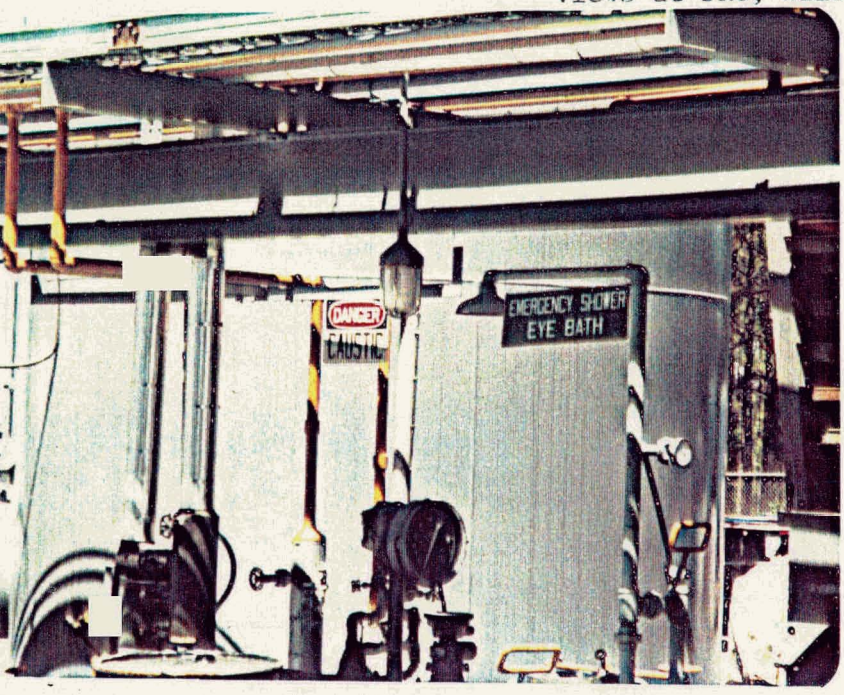
From this independent evaluator's viewpoint this facility does not require a backfit safety analysis and review.

Occupational Safety and Health Program

The Occupational Safety and Health Program at this facility clearly conforms to the guidelines contained in ASFE Order 5481.1. While organized and implemented in a somewhat different fashion from that of some of the other pilot plants, the program for this facility, which has been tailored to suit its special needs, is emminently satisfactory.

Appendix I

Views at SRC, Wilsonville, Ala.



Emergency Eye Bath and

Warning Signs.

Note: Color coded Piping

Fill Stand Spill Containment

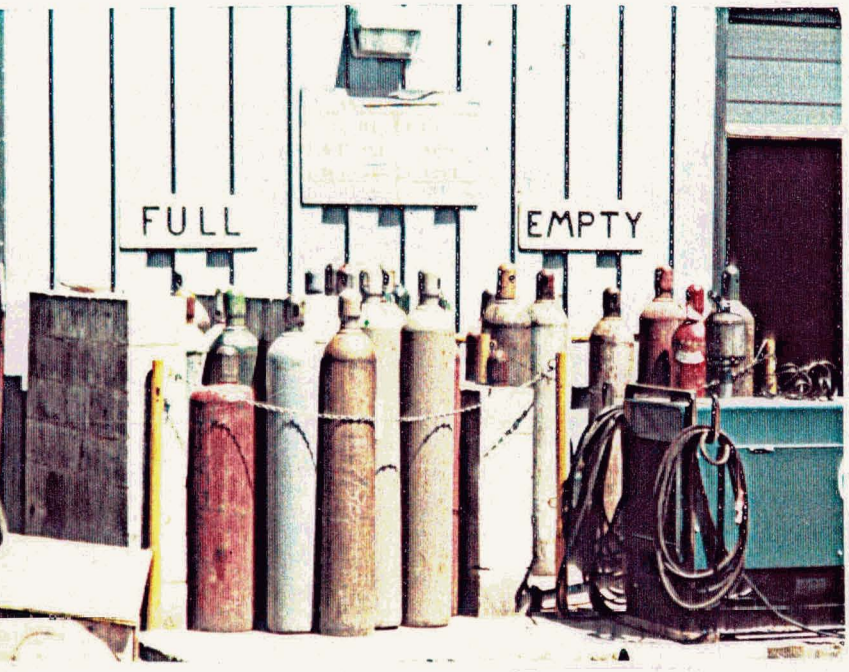
curbing, and Bern around tanks

Color coding and valve &

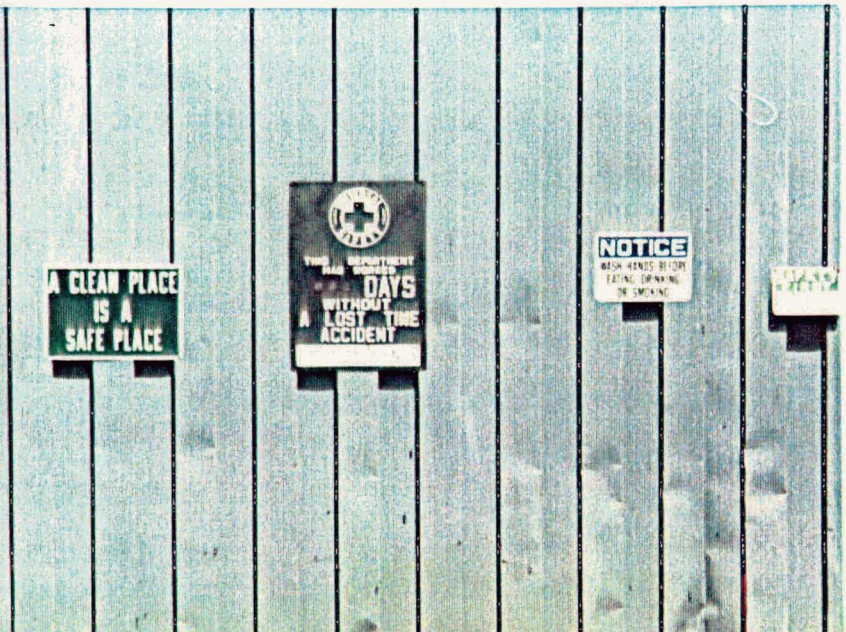
Product Identification

Views at SRC, Wilsonville, Ala.

Sample Taken wearing required protective equipment



Properly stored compressed Gas Cylinders

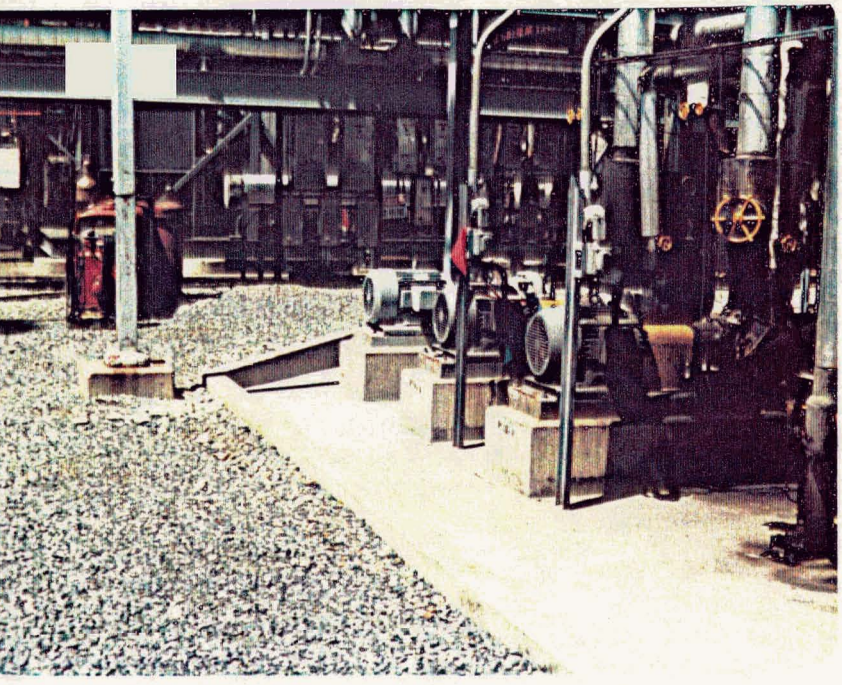


Placards - Safety

Views at SRC, Wilsonville, Ala.

Waste treatment facility--

Note approved Hazard Sign



Spill Prevention curbing

WILSONVILLE HYGIENIC PROGRAM

I. Introduction

Research, animal experimentation and experiences of other companies have shown that certain of the coal-derived liquids as produced in the Coal Liquefaction Process are capable of causing skin problems. Skin cancers can develop after heavy, repeated and prolonged contact of these liquids with the skin in the absence of good personal hygiene.

Success in avoiding the undesirable consequences of excessive skin contact hinges primarily on the personal hygiene of workers exposed to these liquids in their daily work.

The National Institute of Occupational Safety and Health (NIOSH) regards coal liquids to be a moderate hazard as a causal agent for skin cancer. We at Wilsonville consider the SRC Pilot Plant Project to be an excellent opportunity to extend our knowledge in this field by combining good personal hygiene with regular medical checkups. Thus, it is our intent to review our procedures and experiences frequently to ensure that the safety measures adopted are effective in promoting and maintaining your good health.

If you encounter work situations involving unusual exposure to coal liquids which cannot be handled by the considerations outlined here, please bring them to the attention of your supervisor.

While the medical consequences of skin cancer are usually not as severe as maladies associated with some other industrial chemicals, success in developing coal as an energy source, at least in part, hinges on the ability of the production workforce to remain free of adverse health effects.

II. What Wilsonville Is Doing

A. The company requires pre-employment physicals for all employees. Air Products Medical Forms will be used for both pre-employment physicals and annual physicals. Copies of forms are attached.

The company has made special provisions in its facilities and in its clean-clothes program for protection of those employees who routinely may be exposed to coal-derived liquids.

Special change facilities will include a dirty clothes area, a shower facility and clean change lockers. When necessary to wear jackets, it is possible that a soiled jacket may be hung with clean clothing. Facilities have been provided to allow employees to leave the plant in uncontaminated clothing.

The company will provide each employee who routinely may be exposed to coal-derived liquids with a daily change of clean outer clothing. Other employees who may have only incidental exposure will be provided with coveralls.

The company will provide overshoes as necessary for wear over regular shoes in event of spills, etc.

The company will provide special receptacles for control of clothing, towels, and rags.

The company will insist on good housekeeping measures throughout the plant.

The company will frequently review work practices to improve procedures and conditions which may result in unnecessary exposure.

The company will pay 60 per cent of the cost of safety shoes and will expect employees to change shoes before leaving the locker-room.

The company will review procedures with employees to be certain that parts of the program are not overlooked.

The company will:

- Conduct annual physical examinations.
- Make checkups of your skin every three months.
- Monitor employee health records to insure that the health of the workforce is maintained.
- Monitor work areas for physical irritants, noise, gases, vapors, fumes, and dust to make sure that a satisfactory work environment is maintained.

III. Employee Responsibility

Your full and complete participation in the Hygienic Program of the SRC Pilot Plant is a consideration of employment. Accordingly, you must .....

- Practice good housekeeping.

- Minimize skin contact with coal slurry and coal-derived solvents by using appropriate personal protective gear whenever indicated.

- Wash your hands thoroughly with soap and water after contacts with these chemicals.

- Before starting work, apply Kerodex 51 or other protective cream to hands. Also apply to hands midway through shift, or every four hours, washing hands before application.

- Wash hands and other exposed body parts well with D & L Blue Label waterless hand cleaner and Ivory soap and water before visiting toilet, eating or smoking.

- If you are accidentally sprayed or splashed with coal liquids, remove excessively soiled clothing, wash affected areas well and put on fresh clothing.

- Report spills to your supervisor immediately.

- Do not put soiled rags in your pockets. Place in designated receptacles.

- Remove work clothing, shower, and put on street clothing at the end of your work period. Under no circumstances is company-provided clothing to be worn or taken from the plant.

- Keep shoes clean and in good repair. Request overshoes in event of spills, etc. Safety shoes cannot be taken home.

- Wear and properly care for protective respiratory equipment as necessary.

- Report any skin abnormality immediately to your supervisor and the Safety Supervisor.

D O N ' T F O R G E T

- Good housekeeping and personal cleanliness are essential for good health.

- This means keeping your body, your clothing, your equipment, and your work area as clean as possible.

- The company is providing facilities and procedures for keeping you healthy and insists on their use.

- Our joint goal is to .....

KEEP YOU HEALTHY!

SAFETY MEETING PLAN

DIVISION _____ DEPT _____ TIME _____ DATE _____
Began Ended

LEADER'S NAME _____ TITLE _____

1. Opening remarks by leader (speak loudly & clearly)	
2. Safety Talk by Topic: _____	
3. Discuss Recent Accidents and Near Accidents a (Causes b (Prevention	
4. Discuss Unsafe Conditions Observed	
5. Discuss Unsafe Practices Observed	
6. List Safety Suggestions	

NOTE:

05311-275SP

C. Chlon

INTER-OFFICE MEMO

CATALYTIC, INC.

TO: H. E. Lewis AT Wilsonville DATE: 1 April 1980

FROM: C. C. Chlon AT Wilsonville COPY TO: See Distribution

SUBJECT: Safety Activities for the Month of March

The fire water pump was routinely checked and the pump performed in a normal manner.

The fire alarm "Siren" is being tested weekly.

The following named groups continue to hole safety meetings:

Operations, Maintenance, Lab and Construction

The following named subjects were discussed:

"Tank and Line Opening"

"First Aid - Good Housekeeping"

"Safe Practices on Procedures of Hand Valve Operation"

"Safe Practices and Procedures of Material and Equipment Handling"

The Safety Committee held their monthly meeting. The committee representatives are:

C. Chlon - Safety Director
M. Dyer - Technical Group
R. White - Operations
J. Tuck - Maintenance
E. Lachut - Lab

It was noted several Safety Work Orders have been completed including the extension of the hot well vent.

A number of items were discussed: Housekeeping, Safety Showers, and Fire Fighting.

Housekeeping--There are still some areas of the plant that need attention, expecially the upper decks.

Safety Showers - Need adjusted screens checked and painted. (This is in progress.)

Fire Fighting - The need of more training and drills. (This also is in progress.)

There were a number of safety suggestions which are being investigated.

Injuries: Monthly Summary

There were three (3) doctor cases:

B. Pickens; struck a piece of steel that was left in a vice, cut right index finger, took 4 stitches. He was treated and released.

Phillip Lang; insulating a dowtherm line, touched the exposed line, burned his left wrist. He was treated and released.

David L. Mann; lifting ¼" steel plate onto the coal crusher platform with the forklift, then attempted to push the plate into position. He developed a pain in his lower back, radiating down his left leg. Mann was treated for Lumbosacral sprain with disc. David Mann's lost time was nine (9) days.

Before the above noted lost time accident, we were accident free for 358 days.

There were five (5) first aid cases, these consisted of minor burns, cuts and bruises.

Chester C. Chlon
Chester C. Chlon
Safety Director

The "No Lost Time" as of 31 December 1979 is 286 days.

Yearly-To-Date	First Aid Cases	Doctor Cases	Loss Time	No. of Employees
January	8	0	0	107
February	5	2	0	110
March	7	3	1 day	114
April	1	4	0	114
May	10	3	0	117
June	6	1	0	119
July	2	0	0	123
August	7	3	0	124
September	9	2	0	130
October	6	5	0	121
November	6	2	0	120
December	3	1	0	124
	70	26	1 Day	

The "No Lost Time" as of 31 March 1980 is 7 days.

Yearly-To-Date	First Aid Cases	Doctor Cases	Loss Time	No. of Employees
January	2	1	0	124
February	4	1	0	123
March	5	3	9 days	123

Total man hours worked since the last lost time accident is 5,405. Construction man hours worked without an accident is 28,799. Total combined worked hours without a lost time accident is 34,204. Before the above noted lost time accident, we were accident free for 358 days.

Catalytic, Inc.

INJURIES – MONTHLY SUMMARY

Month April 1980
Contract 43480
Client Southern Co. Serv. Inc.
Location Wilsonville, Al.
SRC Pilot Plant

NOTE: This form must be fully completed and forwarded to the Safety Director in the Philadelphia, Pa. home office by the 10th day of the month following the end of the month being reported.

Number of Employees	Hours Worked This Month	First Aid Cases	Doctors Cases	Lost Time Cases	Days Lost	Date Of Last Lost Time Accident
123	19,603	5	3	1	9	3-12-80

List all lost-time cases for the month below:

Name	Craft	Date of Injury	Number of Days Lost	Description of Accident
D. Mann	Maint.	3-12-80	9	Lifting ¼" steel plate on the coal crusher platform. Lower back paid down to left leg. "LS sprain with disc"

Chester C. Chlon

Chester C. Chlon, Safety Director

FIRST DAY ORIENTATION -- NEW EMPLOYEE
(Return to the Administration Office)

Name: _____

Job Title: _____

To The Supervisor:

The information on attached list should be discussed in detail with the new employee during his first days in your organization. Although this information is considered to be essential in helping the employee during his first days in your organization, it is more important to you because it may be used to build a communications bridge to the employee. Your skill in building this bridge will be reflected in the employee's performance for years to come. Previous training and experience on the plant should be considered in the orientation of a employee. However, in no case should the orientation be omitted.

Discuss each item in sufficient detail to permit the employee to function safely and effectively during his early days. From time to time during this orientation ask the employee if he has any questions. If a question is asked which you can't answer -- don't guess -- tell him you will get the answer and pass it on to him. (Be sure to do it when the orientation is completed.) At the end of the orientation session have the employee sign on the appropriate lower line and then sign to show that both parties participated in this session.

Finally, be sure that the man understands that if he has any questions he is to contact his supervisor.

First Day Orientation

1. Introduce the man to other appropriate supervision and fellow workers.
2. Explain his job duties and responsibilities. Emphasis should be placed on the purpose of his job.
3. Introduce the company philosophy of safety (all injuries can be prevented) as a means for making all that follows meaningful for the employee.
4. Discuss the plant safety rules in detail.
5. Explain emergency fire signal "siren".
6. Detail the evacuation procedure and point out the exact location of the rally spots.
7. Explain the fire protection system.
8. Demonstrate how to report a fire.
9. Point out location of fire hose boxes and fire water pump house.
10. Show location of safety showers and blanket.
11. Discuss the chemical hazards of the materials the man will be using.
12. Discuss the special hazards of this job.
13. Explain and supply his safety clothing.
14. Explain and make available protective equipment.
15. Review the company safety philosophy.
16. Instruct man to advise his supervisor of any injury and note it in the medical log.
17. Explain hours of work -- specify starting and quitting times.
18. Discuss attendance (regular attendance is necessary), report absences in advance, provide telephone number for man to call in on and get a telephone number to contact the man on (his home telephone, for example).
19. Specify man's base pay and payday.

20. Explain that we are a Equal Employment Opportunity Company.

21. Refer to Project Rules and Regulations. Give the new employee a copy of the rules and regulations booklet. Explain the few rules that are listed.

No gambling	No horseplay
No fighting	No unauthorized release of information
No intoxicants	No thievery
Smoke only where permitted	

22. Specify lunch period and relief periods. Be sure to locate eating facilities, smoking areas, and changehouse.

The above items were explained to me.

_____ _____

Employee's Signature Date

I discussed the above items.

_____ _____

Signed Date

05311-275SP

INTER-OFFICE MEMO

CATALYTIC, INC.

TO: All Employees AT Wilsonville DATE: 28 Nov. 1979

FROM: H.E. Lewis AT Wilsonville COPY TO:

SUBJECT: EMERGENCY PROCEDURE - FIRE OR EXPLOSION
(Revised 28 November 1979)

1. ACTION

A. The person who first detects a fire, explosion or blow out should go to the nearest phone and notify the Main Control Room Operator.

The main control room board operator will then energize the Fire Alarm (Siren). He will make this announcement.

> "Attention all personnel! Attention all personnel! There is a fire at (give location). All fire crew members report to their station.

Repeat the announcement twice.

B. The operations fire crew members should report to the scene of the fire.

Fire fighting instructions will be given by the Shift Supervisor.

The Operations Shift Supervisor is the Fire Chief.

C. Field operators will be responsible for implementing emergency procedures within the boundary of the affected (fire) area.

Specific instructions will be given by the Fire Chief.

D. OPERATION OF THE EMERGENCY FIRE WATER SYSTEM

1. General

Water from the City supply system is available via a tap valve (outside the fence; painted red; locked in the normal open position) on the 6" header; and, the EMERGENCY WATER BLOCK VALVE (at the water tank; painted red; tagged as "EWBV", normally closed). The "D" Operator on each shift will be responsible for operation of the Emergency Water System.

2. Operating Instructions

a. Open the EWBV at the water tank.

b. Personnel in the control room call the Gaston Steam Plant Day (shift) Supervisor and ask them to put the booster pumps on the City line.

The direct phone numbers which are to be used are as follows:

Day Shift	669-7861
Evening Shift	669-7861 or 669-6301
Night Shift	669-7861 or 669-6301

Explain to the steam plant personnel that we have an emergency.

c. Stand by the water tank and the EWBV. Operation of the EWBV will be necessary to prevent over-filling and emptying the tank.

d. Notify the City of Wilsonville, Water Department (phone no. 669-6180) that the booster pumps are on the line.

e. When the "All Clear" announcement is given, continue to put water in the tank until it is filled (gauge = 35+ft.). Close the EWBV. Notify the Gaston Steam Plant that the emergency has ended and request that the booster pumps be taken off the line. When the pumps are off of the line, notify the Water Department at Wilsonville.

E. MAINTENANCE AND LABORATORY PERSONNEL

1. All welding and burning must stop immediately upon announcement of a fire.

2. Maintenance men assemble at the shop with the wxception of those who have special duties such as operation of the fire water pumps.

3. Assignments of emergency duties for day shift personnel are as follows:

a. Fire Water Supply Pump - W. Hall & G.K. Abbott.

b. Motor Control Center - R. Reams, J. Kidd T105 & Kerr McGee Control Centers.

c. Portable Purple (K) Fire Extinguishers - D. Mann, B. Alexander, M. Burks, M. Baker.

4. Lab technicians and day shift personnel should assemble at the main control room for assignment by the Fire Chief.

II. GENERAL REACTION

A. All plant personnel without a specific assignment will stay clear of the emergency area.

B. All telephone system lines must be cleared for emergency use. The system must be available for use by the Fire Chief's Staff.

C. Plant Evacuation

If the fire is uncontrollable and the order for complete evacuation is necessary, all employees will withdraw to the parking lot. A roll call will then be taken to account for all personnel. To assist in this, order must be maintained and confusion held to a minimum. An up-to-date roster of all employees and their shift designations (A-B-C-D) or their normal working hours must be available at the following locations: Office Building (trailer), Main Control Room and Maintenance Shop.

D. "ALL CLEAR" Conditions

1. When the fire is extinguished and emergency conditions are ended, the Fire Chief will make the "All Clear" announcement over the paging system.

2. Laboratory and Operations personnel should begin monitoring the effluent treatment systems. Surface run-off and potential contamination of waste water collection systems will challenge the maintenance of desired effluent quality standards.

H.E. Lewis

If not in the plant at the time of the emergency, the following people should be notified as soon as possible.

H. E. Lewis	669-7979
J. E. Kimes	678-6772
C. C. Chlon	1-378-5102
H. Blair	1-245-7566

20 Aug. 1979

FIRE OR EMERGENCY SQUAD

"A" Shift

Edwards, J.		Shift Supervisor
ISabell, L.		Panel Board and Communication
Abbott, K.		Fire Pump House During Shift only
Jones, C.		Hydrants
Kirkland, T.		Hydrants
Corley, H.		Lab tech. assigned by the Supervisor
Marshall, R.		Lab. tech. assigned by the Supervisor
Riddle, H.	CSD Unit	Operator assigned by the Supervisor
Etress, R.	CSD Unit	Operator assigned by the Supervisor
Vansant, B.	WWT Unit	Operator assigned by the Supervisor

"B" Shift

Fields, R.		Shift Supervisor
Jones, T.		Panel Board and Communications
Nix, L.		Fire Pump House During Shift only
White, W.		Hydrants
Huckabee, W.		Hydrants
Harris, G.		Lab tech assigned by the Supervisor
McDaniel, M.		Lab tech assigned by the Supervisor
Johnstone, T.	CSD Unit	Operator assigned by the Supervisor
Perry, J.	CSD Unit	Operator assigned by the Supervisor
Forbus, T.	WWT Unit	Operator assigned by the Supervisor

"C" Shift

Fredrick, W.		Shift Supervisor
Lewis, T.		Panel Board and Communications
Thrash, S.		Fire Pump House During Shift only
Baker, R.		Hydrants
Coleman, J.		Hydrants
Wright, A.		Lab tech. assigned by the Supervisor
Wills, V.		Lab tech. assigned by the Supervisor
Latta, C.	CSD Unit	Operator assigned by the Supervisor
Phillips, D.	CSD Unit	Operator assigned by the Supervisor
McDonald, R.	CSD Unit	Operator assigned by the Supervisor

"D" Shift

Anderson, B.		Shift Supervisor
McCain, R.		Panel Board and Communication
Pitts, C.		Fire Pump House During Shift only
White, R.		Hydrants
Butler, R.		Hydrants
Latchut, E.		Lab tech assigned by the Supervisor
Robertson, P.		Lab tech assigned by the Supervisor
Willis, D.	CSD Unit	Operator assigned by the Supervisor
Penton, R.	CSD Unit	Operator assigned by the Supervisor
Simon, S.	WWT Unit	Operator assigned by the Supervisor

Chester Chlon

Chester Chlon

05311-2755P

INTER-OFFICE MEMO

CATALYTIC, INC.

TO: All Supervisors AT Wilsonville DATE: 12 Nov. 1979

FROM: C.C. Chlon AT Wilsonville COPY TO:

SUBJECT: Safety Equipment Required for Plant Sampling by All Personnel

Purpose:

To provide a standard rule for sample taking by All Personnel.

Procedure

This directive is the first of a stringent set of safety rules to be set up for all personnel. Unless superceded by plant safety directives, this and all further rules have to be adhered to in total.

The safety equipment mandatory when taking any plant sample of 130°F or higher is as follows:

1. Safety shield.
2. Safety glasses or goggles.
3. Rubber gloves.
4. Rubber raincoat (long).
5. Other plant wide designated equipment as safety shoes, helmet and uniform.

If any employee is observed without use of the full safety equipment designated he will be liable for disciplinary action.

Chester C. Chlon
Safety Director

CCC:cd

Air Products

cc - 2 ELH
1 L. Knox
1 J. Cicalese
1-22-79

Date 17 January 1979

INTEROFFICE MEMORANDUM

Subject ARSENIC MONITORING
WILSONVILLE, SRC PLANT

To H. E. Lewis — Wilsonville, AL
(Location, Organization, or Department)

From G. R. Florky — Corporate Medical
(Location, Organization, or Department)

cc: J. H. Body
J. J. Cicalese
L. C. Knox
A. H. Muller
L. B. Tepper, M.D.

On November 2, 1978 arsenic exposures were assessed at the Wilsonville, Alabama SRC I plant. The exposure monitoring was performed as the initial step in compliance with the OSHA Standard requiring initial environmental assessments of all work places where inorganic arsenic may be present.

The results of the personal monitoring given in Table I indicate all monitoring results were below the detection limit of 0.6 $\mu g/m^3$ and therefore well below the OSHA Permissable Exposure Limit of 5 $\mu g/m^3$.

Exposures were monitored during Run No. 151 with Kentucky No. 9 coal. Since Kentucky No. 9 coal contains a relatively high average arsenic content of 8.7 ppm, it is reasonable to assume arsenic exposures will not exist during the processing of any of the coals used at Wilsonville. Therefore, no further arsenic monitoring is necessary.

Exposures representative of the entire plant population were evaluated for each of the three general employment classes within the plant. Approximate full shift samples were collected by the methods outlined in the OSHA arsenic standard and analyzed colorimetrically by the University of Cincinnati Medical Center Kettering Laboratory, an AIHA accredited laboratory.

GRF:lpf

Attachments

TABLE I

Inorganic Arsenic Exposures

SRC I Plant

Wilsonville, Alabama

November 2, 1978

Individual	Job Title	Sampling Time, min.	Arsenic, $\mu g/m^3$
A. Wright	Lab Technician	426	N.D.
K. Abbot	C Operator	435	N.D.
E. Lewis	Maintenance Mechanic	445	N.D.

N.D. = $< 0.6 \mu g/m^3$

OSHA Permissalbe Exposure Limit = $10 \mu g/m^3$

OSHA Action Level = $5 \mu g/m^3$

HAZARDOUS MATERIALS (5)

CHEMICAL	(1) Toxicity L	S	Vapor Den	Spec. Grav.	Water Sol.	(2) DOT	Flash Pt.	Flam. Range	Ign. Temp.	Disaster ATM	Fire	(3)	(4) To Fight Fire	Remarks
Cyclohexane	#	#	2.9	.78	No	FL	1	1.3-8.4	514		3		CO_2 Foam DC	
Diesel Oil	+	+		<1.0	No		>100		494		2		CO_2 Foam DC	
Ethane	#		1.0	Gas	No	FG		3-12.5	950		3		CO_2 DC	Simple Asph.
Gasoline	+	+	>3.0	.75	No	FL	-50	1.4-7.6	495		3		Foam CO_2 Fog DC	
HCL	⊕	⊕		Liq	Yes	CO	NCF			⊕				
Hydrogen	+		.07	Gas	M	FG		4.0-75.0	1085		3		CO_2 DC	
Hydrogen Sulfide	⊕	⊕	1.2	Gas	Yes	FG		4.3-46.0	500	⊕	3		Fog CO_2 DC	Rotten Egg odor
Helium	+		.14	Gas		CG		NCF		-	-		Inert	
Mercury	⊕	⊕		Liq						⊕				
Methane	+	-	.55	Gas	No	FG		5.3-14	999		3		CO_2 DC	Asphyxiating
Nitric Acid	⊕	⊕		1.5	Yes	CO		NCF but High Oxid.		⊕	2		Fog	
Oxygen	-	-	1.4	Gas	Yes	CG		NCF						Supports Combustion
Pentane	+		2.5	.63	No	FL	-56	1.4-8.0	588		3		CO_2 Foam DC	Narcotic in high conc.
Phenol	⊕	⊕	3.2	1.1	Yes	PO	175		1319	⊕	2		Fog DC CO_2	Special Cloth.
Propane	+	-	1.5	Gas	No	FG	-156	2.2-9.5	871		3		Fog CO_2 DC	

HAZARDOUS MATERIALS (5)

CHEMICAL	(1) Toxicity L	Toxicity S	Vapor Den	Spec. Grav.	Water Sol.	(2) DOT	Flash Pt.	Flam. Range	Ign Temp.	Disaster ATM	Disaster Fire(3)	(4) To Fight Fire	Remarks
Acetone	#	#	2.0	.79	Yes	FL	0	2.6-12.8	1000	#	3	Fog CO_2 ALFO DC	
Acids (gen.)	#	#			Yes	CO				#			Corrosive
Alcohols(gen.)	+	+	>1	<1	Yes	FL	Var	Flam			3	Fog CO_2 ALFO DC	
Alkalies (gen.)	#	⊕			Yes	CO		NCF					Eyes RW-H_2O →heat
Ammonia (Anh)		⊕	.58	Gas	Yes	CG			1204	⊕	2	Fog CO_2 DC	No H_2O
Ammonia (aques)	#	⊕		Liq	Yes	CO		NCF		#			Fog WH → tox. fumes
Anthracene		+	6.2	1.2	No		250	.6-	881	+	2	Fog CO_2 Foam DC	
Benzene	#	#	2.8	.88	No	FL	12	1.4-8.0	1000	#	3	CO_2 Foam DC	
Biphenyl (D.T.)	⊕		5.3	Sol	No		235		498		1	CO_2 DC	
n.Butane	#	-	2.0	Gas	M	FG	-76	1.9-8.5	806	#	3	Fog CO_2 DC	Stable below 31°C
CO_2	+	+	1.5	Gas		CG		NCF					May freeze skin
Caustic Soda	⊕	⊕		2.0	Yes	CO		NCF					RW-H_2O → heat
Chloroform	⊕	+	4.1	1.5				NCF		⊕			
Coal Tar Dist.	#			Liq		FL					3		
Coal Tar Light Oil	+			<1	No	FL	60	1.3-8		⊕	3	Fog CO_2 Foam DC	
Cresol	#	#	3.7	1.0	No		110			⊕	2	Fog CO_2 Foam DC	
Crude Oil	+	+		.78	No	FL	<90			#	2	Fog CO_2 Foam DC	

HAZARDOUS MATERIALS (5)

CHEMICAL	(1) Toxicity L	S	Vapor Den	Spec. Grav.	Water Sol.	(2) DOT	Flash Pt.	Flam. Range	Ign. Temp.	Disaster ATM	Fire(3)	(4) To Fight Fire	Remarks
Sulfur	+	+		Cry	No		405	Comb Solid		⊕	1	Fog	Melts @ 234°C
Sulfur Dioxide	⊕	⊕	2.2	Gas		CG		NCF		#	-		Very toxic
Sulfuric Acid	⊕	⊕		1.8	Yes	CO		NCF		⊕	2	No Water	
THF	⊕	⊕	2.5	.89	Yes	FL	1	2.0-11.8	610	#	3	Fog CO_2 ALFO DC	Narcotic in high conc.
Toluene	#	+	3.1	.86	No	FL	40	1.3-7.0	997	#	3	Fog CO_2 Foam DC	
Xylene	+	+	3.6	.86	No	FL	77-M 63-O	1.1-7.0	900		3	Fog CO_2 Foam DC	

(6)

Notes (1) L-Inhalation S - Skin

- \- Not toxic
- \+ Slight
- \# Moderate
- ⊕ Dangerous

(2)
- CG Compressed gas
- CO Corrosive
- FG Flammable gas
- FL Flammable liquid
- FS Flammable solid
- PO Poison

(3) Fire
- (1) Slight
- (2) Moderate
- (3) High
- (4) Will detonate

(4)
- ALFO Alcohol type
- Foam Ordinary foam
- Fog Water spray
- CO_2 Carbon dioxide
- DC Dry Chemical

(5) Includes chemicals used for lab analysis

(6) Treat coal, SRC, solvent etc. as toxic ⊕ material

For further information see: Dangerous Properties of Industrial Materials- Sax
Handbook of Hazardous Materials - Baker
Handbook Environmental Data on Organic Chem- Verschveren