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INTERNATIONAL
TECHNOLOGY
CORPORATION

February 5, 1992

Mr. Bruce Trego
Safety Director
Vista Chemical Company
P.O. Box 91
New Highway 25
Aberdeen, Mississippi 39730-0091

Dear Mr. Trego:

Please find enclosed the final copy of our trip report from the meeting we had with you and your colleagues at the Aberdeen Vista Chemical facility on July 30 regarding OSHA's proposed standards on process safety management and medical surveillance. We wish to thank you and your colleagues again for the time you spent with us and the timely manner in which you responded to our request for review of the draft site visit report.

If you have any additional questions, please feel free to call me at (513)-782-4700.

Sincerely,

IT CORPORATION

Mary Beth Foerst

Mary Beth Foerst
Project Engineer

Enclosure

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SITE SURVEY REPORT:
CHARACTERIZATION OF PROCESS SAFETY MANAGEMENT
AND MEDICAL SURVEILLANCE PROGRAMS OF
VISTA CHEMICAL COMPANY, ABERDEEN, MISSISSIPPI (SIC 2821)

DATE OF SURVEY
JULY 30, 1991

Prepared by
INTERNATIONAL TECHNOLOGY CORPORATION
11499 Chester Road
Cincinnati, Ohio 45246

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OFFICE OF REGULATORY ANALYSIS
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PURPOSE OF SURVEY

On July 30, 1991, representatives of IT Corporation met with representatives of Vista Chemical Company, a major manufacturer of polyvinyl chloride resins (SIC 2821) at one of their manufacturing facilities in Aberdeen, Mississippi. The purpose of the meeting was to gather information on various aspects (current practices, costs, benefits, etc.) of the company's process safety management (PSM) and medical surveillance (MS) programs. These data will be used to obtain an understanding of the potential impacts of the proposed Occupational Safety and Health Administration (OSHA) PSM standard (29 CFR 1910.119) and a proposed standard addressing medical surveillance.

EMPLOYER REPRESENTATIVES CONTACTED

The following company representatives participated in the meeting to discuss the PSM and MS programs at the facility:

Robert W. Seymour, Plant Manager
Bruce L. Trego, Safety Director
Rendell Newton, Chief Process Engineer

SURVEY TEAM

The survey team consisted of two individuals from IT Corporation: E. Radha Krishnan, P.E., and Mary Beth Foerst.

COMPANY BACKGROUND

Vista Chemical Company's Aberdeen, Mississippi, plant is a major manufacturer of polyvinyl chloride resins (SIC 2821) and compounds that are used in a wide range of applications. The Aberdeen plant was built in 1963 by the Thompson Apex Company and was acquired by Conoco Chemicals Company a year later. Conoco was purchased by DuPont in 1981 and Vista was formed through a leveraged buyout in 1984. There are nine Vista Chemical locations throughout the U.S.

The Aberdeen facility currently employs approximately 250 workers. Of these, approximately 170 are hourly employees. The facility operates 24 hours per day, utilizing 12-hour shifts.

With respect to OSHA's data-gathering activities on the PSM and MS programs, Vista recently completed the Phase II PSM and MS questionnaire surveys for OSHA. The IT site visit was conducted to augment and elaborate on the information recently gathered by OSHA's contractor, KCA Research, Inc., through the questionnaire surveys.

Information gathered during the onsite visit and from the questionnaires strictly reflects the Vista era of the plant. Many of the procedures practiced during the DuPont/Conoco eras have been incorporated into the current operations, with some changes and additions by Vista.

PROCESS SAFETY MANAGEMENT PROGRAM

The formal Conoco PSM program was continued at the Vista Chemical Aberdeen facility when Vista was formed in 1984. Types of hazard analyses performed at this facility include HAZOP, what-if, checklist, and failure modes and effects analysis (FMEA). A hazard analysis is performed on all new capital projects and is currently being done for existing plant operations. Several process changes have been made to enhance process safety in the plant. Vista is a member of the Chemical Manufacturers Association (CMA) and the International Loss Control Institute (ILCI). These associations provide safety information to their members, as well as universal safety concerns experienced by other companies. Vista also participates in CMA's Responsible Care Program.

Vista has well-established and integrated PSM and MS programs. The programs are coordinated with the Plant Manager, Safety and Health personnel, Engineering, and the workers' union. Emergency response has been coordinated with the local fire department, which is kept up-to-date on the chemicals used at Vista. Employee participation is encouraged on safety teams at Vista Chemical.

Additional information on the company's PSM program is provided on the completed site visit information form.

MEDICAL SURVEILLANCE PROGRAM

The medical surveillance program at Vista is under the direction of the Corporate Medical Director. A full-time Registered Nurse is located at the Aberdeen plant. The MS program was initiated prior to the 1984 formation of Vista and carried over as a Vista program. Currently, each prospective employee of the Vista Aberdeen plant is required to have a preplacement medical examination. Periodic medical examinations are offered to all employees at the plant. These include annual and interim examinations. The purpose of the medical tests (other than being required by law) is to provide a baseline health examination for new employees and to identify health problems of occupational, as well as nonoccupational, origin.

Additional information on the company's MS program is provided on the completed site visit information form.

**Site Visit Information form:
Vista Chemical Company (SIC 2821)**

1. **Employment History** (Data from 1990 and every five years back as far as possible, or use what is available)

Year	Total Employment	Production Employment	Turnover rate
1990	249	170	7.9%
1984	243	168	1.8%

2. **History of Medical Surveillance Program** (If possible, identify separately pre-employment, pre-placement, periodic, etc. Data from 1990 and every five years back as far as possible or use what is available)

Year initiated: 1984

Reason for initiating program: To be aware of health problems associated with occupational exposure and to identify and assist employees with non-occupational health problems, as well as to be in compliance with OSHA health standards.

Year by year history:

(Data may be obtained in format other than this one)

Year	Coverage	Tests	Use of Data
1984-90	Pre-employment exams	See Appendix A	Baseline examination
1988-90	Periodic exams	See Appendix A	Identify any occupational illnesses
1988-90	Interim exams	See Appendix A	Identify any occupational illnesses
1984-87	Periodic exams	See Appendix A	Identify any occupational illnesses
1984-87	Interim exams	See Appendix A	Identify any occupational illnesses

3. **Program Records**

What methods of recordkeeping do you use for health and safety data?

Vista maintains the records at the corporate office in Horizon, Texas. The records are kept at the Vista Corporate Medical Department on microfilm.

Vista maintains the records from computer printouts and microfilm at the Corporate Medical Department in Houston, Texas. Health Examinatics, Inc., generates and stores these records on computer.

Do you analyze your data for trends? Yes If so, how?

The medical data is analyzed and compared to a reference population of over 50,000 workers corresponding to employee age and sex. Any abnormal conditions are fully investigated by the Safety Director and other appropriate plant personnel.

How is employee confidentiality maintained?

The plant nurse and the Corporate Medical Director maintain all employee medical records.

**4. Health Conditions Found by Medical Surveillance Program
(Data from 1990 and every five years back as far as possible, or use what is available)**

Year	Number	Type of Condition	Cause	Action
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No trend detectable.

5. Workplace Monitoring (Chemicals, other hazardous substances, ergonomic stress conditions and other physical hazards such as noise, radiation, etc.)

Chemicals and Hazards Present

Hazard/ Chemical	Number of Employees Exposed	Controls (Including Respirators)	Frequency of Monitoring	Typical Exposure Levels
Vinyl chloride	134	Engineering controls	1000 samples/year	Avg. 1% over expo- sure/year
Ammonia	7	Engineering controls	Not available	Not available
Chlorine	5	Engineering controls	Not available	Not available
Lead	127	Engineering controls	250 samples/year	Avg. 1% over expo- sure/year
Noise	237	Shift rotation, hear- ing protection, equipment modifications	Periodic evaluation by outside consultant	Not available

6. **Changes Attributed To Medical Surveillance Program**

Non-Quantitative Analysis:

Please indicate what changes (if any) that your company has realized as a result of implementing your medical surveillance program.

Employees have a greater health awareness and are taking the initiative for improving their health.

Quantitative Analysis:

Has your company noticed any changes in any of the following as a result of implementing your medical surveillance program?

Illnesses, Injuries, Fatalities - Injuries/Illnesses decreased.
Employees are detecting health problems earlier and are improving their overall wellness.

Worker Comp Claims - Data not available.

Insurance Costs - Data not available.

Absenteeism - Data not available.

Turnover - Data not available.

Productivity - If yes, how is this measured? - Data not available.

Legal Expenses - Data not available.

Safety Awareness - Data not available.

Other - Health care costs have decreased.

(Please provide data as available)

7. **OSHA 200 Information** (For employees under MS only, if possible.
Primary focus: illnesses. Injuries, if ergonomic related. Data from 1990 and every five years back as far as possible, or use what is available)

Year	LWD Cases	NLWD Cases
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The Aberdeen facility has experienced 12 years without a lost workday case. Recently, Vista has also begun tracking injuries to any on-site contractors.

8. Worker Compensation Cost & Claim Records (Data from 1990 and every five years back as far as possible, or use what is available)

Year	Employees Under MS	Employees not Under MS
1990	9	Not available
1986	8	Not available

The number of worker's comp cases have remained steady at approximately 8 per year since 1984. All employees are offered physical examinations annually.

9. Insurance Costs

Did you coordinate or use any criteria in setting up your medical surveillance (MS) program with your health insurance carrier? Yes.

If yes, please describe.

Vista utilizes several insurance carriers. Representatives of the insurance company audit the plant for safety, and industrial hygiene issues. Findings are written up as action items and are sent to the General Manager, who monitors the status of the completion of the items.

Have your insurance rates changed because of:

- 1) Your medical surveillance program?**
- 2) Your process safety management program?**

The lower insurance rates are not directly attributable to either program, but is most likely a combination of both programs.

If so, what were the changes?

The insurance costs for the plant have decreased.

10. Management of PSM Chemical Hazards

Do you manufacture, process, or use any of the chemicals on the attached list above the threshold quantity indicated? (Appendix A PSM list of highly hazardous chemicals to be attached)

Chlorine

Do you manufacture, process, or use any other toxic, flammable, or explosive chemicals at this facility?

Yes.

If yes, please list:

Anhydrous ammonia
Vinyl chloride
Propane

Lead compounds
Gasoline

11. History of Process Safety Management Program

Do you have a program in place for minimizing the consequences of catastrophic releases of toxic, flammable or explosive chemicals?

Yes.

If yes, please describe.

Safety audits, industrial hygiene monitoring, and HazOp studies are used to identify possible process hazards. Safety audits are performed by both plant personnel and outside consultants. Monitoring for chemical releases is performed on an as-needed basis. Daily tests of the ventilation system in the lead dumping area are performed by the operators and periodically rechecked by safety personnel. HazOp studies are performed for all newly installed capital projects and have been completed for at least one-third of the existing facilities. Formalized HazOp training of corporate and plant engineers has been performed by an outside consultant. Maintenance and operating personnel are also involved in the HazOp studies for utilization of their knowledge of the plant equipment.

When was this program established? Prior to 1984 by the previous owner.

Do you have a program in place dealing with chemicals, other hazardous substances, ergonomic stress conditions, and other physical hazards such as noise, radiation, etc.?

Yes.

If yes, please describe.

A formalized ergonomic program is not in place because there is very little repetitive motion or lifting at this facility. Ergonomic improvements have been made as a result of job analyses. One such case involved the repetitive stacking of bags onto pallets. A pallet lift was installed to eliminate the need for operators to bend over to stack the bags of plastic pellets. An outside consultant has performed noise monitoring and some areas of the plant have been designated as a hearing protection area. Equipment that generates noise above the threshold limits is analyzed each year for noise level. Abnormal levels would warrant maintenance of the equipment.

When was this program established? Prior to 1984 by the previous owner.

12. Process Safety Management as Part of Hazard Management

What activities/procedures are incorporated into your process safety management program (e.g., hazard analyses, safety audits, etc.)?

Safety audits, industrial hygiene monitoring, safety committees, HazOp studies, and use of outside consultants to audit processes and sponsor training programs, are all integrated into the PSM program. All employees are initially trained on their specific jobs.

Does your facility maintain records of process hazards identified from your process safety management program?

Yes.

What method of recordkeeping do you use for your process safety management program?

The records are kept in the form of safety audit reports, monthly safety minutes, accident reports, and industrial hygiene measurements. Each department keeps its own records for projects.

Who in your company is responsible for your process safety management program?

The General Manager, Plant Manager, Safety Director, Chief Process Engineer, and Operating Department Superintendent.

How much time per week does this individual devote to this program?

The Safety Director has three full-time assistants. There is one full-time environmental person and one that assists part-time to this program. A typical HazOp, study for a new process (e.g., 3 to 4 P&IDs) can be completed by four people in ~2 days. The time required to do HAZOPs in existing units will be significantly higher.

13. Major Changes in Facility (Major renovation, automation, product mix changes. Data from 1990 and every five years back as far as possible, or use what is available)

Year	Type of Change (Describe)	Reason
1989	New wheel chock for vinyl chloride monomer rail car	An accident occurred in the past where the rail car brake failed. Flexible hoses attached to the rail car broke, releasing vinyl chloride. Since then a new wheel chock has been designed and used to prevent reoccurrence of this type of accident. A new project to install an automatic chemical transfer shutoff system at the railcar is currently being considered.
1991	Installation of a new incineration unit	More efficient incineration of vapors which provides a decreased chance for exposure.
1989	Elimination of hot caustic in wastewater treatment system	Eliminate exposure to caustic.

14. Process Changes Resulting from Process Safety Management Program

Would you provide us with details on examples of process changes that have resulted in increased safety for a specific process or operation at your facility? Please attach copies of any available papers or reports.

Several changes have been made at Vista Chemicals to increase safety.

- A bleeder plugging program was instigated to reduce chemical releases from open-ended lines.
- A line opening procedure was developed to prevent operators from being sprayed by chemicals while opening lines.
- Centralized control rooms were installed for the remote control of critical process equipment.
- Batch sizes were modified so that an entire bag of pigment is used in a batch to reduce exposure to lead during bag handling.
- A metering system for addition of pigments is being installed.
- The system to add inhibitor in the case of a runaway reaction has been automated for the remote "killing" of a reaction.
- A propane unit has been installed to be used as boiler fuel in case of the loss of natural gas.
- A fire and leak detection system and deluge system were added to the propane unit in 1990.

Have any process modifications led to changes in any of the following?

- **Chemical release** - Decreased.
- **Incidents** - Decreased.
- **Explosions** - No explosions have occurred at this facility.
- **Fires** - Decreased.
- **Product quality** - Increased.
- **Equipment downtime** - Decreased.
- **Employee exposures** - Decreased.

Please provide any quantitative analysis you may have on the changes which occurred.

15. Administration/Cost

Would you provide us with the costs and benefits associated with implementation of these changes?

It is estimated that the cost to update the process and instrumentation diagrams (P&IDs) for the processes at this facility will be \$150,000.

Is your process safety management program integrated/coordinated with your medical surveillance program?

Yes.

If yes, how does this occur?

See answer below.

Is your process safety management program integrated/coordinated with any other health and/or safety program such as exposure monitoring?

Yes.

If yes, list program(s):

Industrial hygiene monitoring
Safety audits
Accident reports

How does this occur?

The PSM program is integrated by communication through the Plant Manager. Programs such as industrial hygiene monitoring and safety audits are used to identify potential problems. A Central Safety Committee integrates all of the programs through direct communication of appropriate plant personnel. The General Manager communicates all LWD accidents and other safety concerns to all of the Vista Chemical plants. A Joint Safety Committee is sponsored by the worker's union and the company. A Safety Director is located at each plant and is responsible for implementing company-wide changes to improve safety.

16. **Changes Attributed to Process Safety Management Program**

Non-Quantitative Analysis:

Please indicate what changes (if any) that your company has realized as a result of implementing your process safety management program.

Increased safety awareness among plant personnel.

Quantitative Analysis:

Has your company noticed any changes in any of the following as a result of implementing your process safety management program?

Illnesses, Injuries, Fatalities - Reduced exposure to vinyl chloride monomer through reduced emissions. Changes were made to operating procedures and equipment to achieve a substantial reduction in emissions.

Worker Comp Claims - Reduced by more than 50 percent.

Absenteeism - Not applicable.

Turnover - Not applicable.

Productivity - If yes, how is this measured? Yes. Decrease in equipment downtime allows for more time for production.

Legal Expenses - Data not available.

Safety Awareness - Increased.

Other - None.

(Please provide data as available)

APPENDIX A

**PRE-EMPLOYMENT AND PERIODIC MEDICAL EXAMINATIONS
PERFORMED AT VISTA CHEMICAL COMPANY**

ATTACHMENT A**TESTS FOR PRE EMPLOYMENT PHYSICALS**

Medical History
Hematology with Differential
Urinalysis
SMAC
Chest Xray
EKG
Spirometry
Audiometry
Drug Screen
Physical Examination

ATTACHMENT B

TESTS FOR 1984-1987 PERIODIC MEDICAL SURVEILLANCE

Medical History

Anthropometry

Vision

Tonometry

Audiometry

Spirometry

Chest xray

EKG

Hematology with Differential

Urinalysis

SMAC

Hemoccult

Blood Lead for Lab, Compound, and Maintenance

Comparative Data

Physical Examination

ATTACHMENT C**TESTS FOR 1984-1987 INTERIM MEDICAL SURVEILLANCE**

Medical History
Comparative Data
Hematology with Differential
Urinalysis
SMAC
Blood Lead for Compound, Lab, and Maintenance

Physical Examination

ATTACHMENT D

TESTS FOR 1988-1990 PERIODIC MEDICAL SURVEILLANCE

Medical History

Trend Analysis

Anthropometry

Vision

Tonometry

Audiometry

Spirometry

Chest Xray

EKG

Hematology with Differential

Urinalysis

SMAC

Hemocult

Lipid Profile

Blood Lead for Compound, Lab, and Maintenance

Physical Examination

ATTACHMENT E

TESTS FOR 1988-1990 INTERIM MEDICAL SURVEILLANCE

Medical History

Trend Analysis

Hematology with Differential

Urinalysis

SMAC

Blood Lead for Compound, Lab, and Maintenance

Physical Examination