

Vista Chemical Company

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October 2, 1989

VISTA

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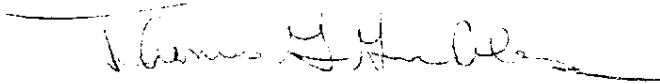
Dear Patricia:

Attached is an annotated copy of the case study for Vista Chemical developed for your research project "Corporate and Community Management of Chemical Risk".

The comments and changes made in the text are mostly for accuracy and protection of confidential information. Some changes are necessary based on real changes in the information since your team visits. Please call me at 713-588-3445 if you have questions.

Vista Chemical can be identified by name in the report. We believe it to be a fair accurate description of our activities in Houston and Aberdeen.

Sincerely,


Thomas G. Grumbles, C.I.H.
Environmental Quality Manager

dlj

Attachment

cc: T. H. Huffman, M. S. Reynolds, W. L. McClain

ABERDEEN

F. G. Jeanson, R. W. Seymour, R. Newton, B. Trego, P. Kober

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THE
CENTER FOR
ENVIRONMENTAL
MANAGEMENT
TUFTS UNIVERSITY

Draft Case Study Outline

Company
_____ of Vinyl Chloride

- no production
of VCM at
Aboldeen*
- 1.0 The Company
 - 2.0 The Facility and Activities Involving the
~~Production/Use~~ of Vinyl Chloride
 - 3.0 The Community and Its Relationship with the Facility
 - 4.0 Recent Risk History Involving the Community, the
Facility, and Vinyl Chloride
 - 5.0 SARA Title III Implications for the Company
 - 6.0 Voluntary Measures to Reduce Accident Risks to the
Community
 - 7.0 Voluntary Measures to Reduce Operational Release Risks
to the Community
 - 8.0 Voluntary Measures to Improve Emergency Response
Planning
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 - 10.0 Role of Technology Transfer
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Draft Case Study

Vista Chemical Company Producer and Intermediate User of Vinyl Chloride

1.0

The Company

in one manufacturing joint venture in the U.S. and —

Vista Chemical, headquartered in Houston, Texas, produces commodity and specialty chemicals at nine facilities in the U.S. and participates in three manufacturing joint ventures overseas. A Fortune 500 company, Vista has annual sales of \$800 million and employs 1,700 people worldwide. Originally the chemical-producing division of Conoco, Inc., an oil company, Vista became an independent corporation in 1984, shortly after Conoco was acquired by DuPont.

The firm manufactures chemicals used to make household detergents, cleaners, cosmetics, shampoos and skin creams (linear alkylbenzene, ethoxylates, synthetic alcohols); and solvents, alumina, ethylene, vinyl chloride monomer (VCM), normal paraffins, polyvinyl chloride (PVC) resins, and PVC compounds. At one of Vista's three facilities in Lake Charles, Louisiana, the company produces VCM ~~(annual capacity of 750 million pounds)~~, most of which is shipped by rail to its Aberdeen, Mississippi plant for use in PVC resin production (annual capacity of ~~800~~ 450 million pounds) and PVC compounds and plasticizers. Vista's PVC resin is sold to firms making a wide variety of products, including water and sewer pipe, cable coatings, home siding, window frames, auto trim, food packaging and foam sheeting. At this time, Vista has a 10% share of the domestic PVC market and is now expanding overseas sales.

its Oklahoma City plant and 10

With the public offering and sale of 2.75 million shares of common stock in 1982, Vista Chemical became predominantly held by the public for the first time. Now, some 75% of its stock is publically-owned, and approximately 20% remains held by its directors and employees. The firm ~~is in the process of~~ building a new \$25 million research and development center in Austin, Texas. This center will assist Vista and its customers in developing special PVC products.

new and improved products, including

has recently completed

According to its 1988 Annual Report, "1988 was a year of explosive earnings growth and robust cash flow," with net sales rising from \$608.9 million in fiscal 1987 to \$781.4 million in fiscal 1988. The Report states that the firm "places a high priority on employee safety." In fiscal 1988, this commitment earned the Company 14 awards from the Petroleum Refiners Association, six from the National Safety Council and two from the Society of the Plastics Industry.

The corporate environmental management and communications staff are relatively small, with these functions largely left to plant management. The corporate Manager of Environmental Quality and the General Manager of VCM and Polymers both report to the Senior Vice-President of Operations. Vista currently has no corporate-level safety staff. ~~However, the firm is considering its establishment.~~

2.0 The Facility and Activities Involving the Use of Vinyl Chloride

Vista's Aberdeen, Mississippi plant produces an average of 600 million pounds of PVC resin annually, ~~as well as PVC compounds.~~ ^{and compounds Thompson-Apex} The plant, built by ~~Conoco~~ ^{and acquired by Conoco in 1965} in 1963, has been "modernized" under a program started in 1981. Many Conoco employees continued at the plant after Vista was formed in 1984. Currently, the facility employs about 250 persons.

¹⁰³⁴² The plant produces PVC resins and compounds on a batch basis in ~~two~~ reactors. The process starts with the arrival of six to eight railcars of VCM each day from Vista's Lake Charles VCM plant. The VCM is then transferred to a storage sphere with a four million pound capacity. VCM is drawn from the storage sphere, mixed with water and other ingredients and heated in the reactors to create PVC resin in the form of a slurry. Following the reaction process, the PVC slurry ~~is passed through the condenser system where it is steam-stripped of virtually all~~ ^{EPA} to remove unreacted VCM, in accordance with ~~OSHA~~ ^{OSHA} requirements. The VCM captured in this process is recycled back to the reactors for reuse. The PVC slurry is pumped into blending tanks and then to dryers where it emerges as a dry white powder. The powdered resin, stored in silos, is then available to be loaded onto railcars and trucks for shipment to customers, or to be used onsite for blending with other materials to produce several intermediate compounds for other customers.

The management team ^{superintendent} responsible for operations and environmental and safety matters reports to the plant manager, and includes a plant ~~supervisor~~ ^{two} and an operations superintendent, a chief process engineer and an environmental coordinator, a safety director, and an occupational nurse. Full responsibility for operational safety and accident risk reduction at the plant level rests with plant officials, who function autonomously, since there is no corporate headquarters safety staff. For the last two years, the plant has been awarded first place for environmental protection by the Vinyl Institute (trade association), based on an evaluation of compliance with vinyl chloride regulations. The plant has also achieved ten years of operation without a lost time accident to an employee.

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3.0 The Community and Its Relationship with the Facility

The city of Aberdeen, with a 1980 population of 7,184, is located in Monroe County in northeastern Mississippi. The area's economic base is a combination of agriculture (primarily cotton and soybeans), timber and forestry, and heavy industry (primarily chemical manufacturing and metal fabricating). Industrial development is a high priority for the city. Aberdeen recently acquired a new port and lock and dam facilities on the Tennessee-Tombigbee Waterway, which opened in the spring of 1985. The waterway and port facilities have already attracted new industries to the area, and are expected to play an important role in the area's future economic growth.

Vista employs about 250 people at the Aberdeen plant, in addition to many contractors. There are a few other area employers approximately equal to Vista in size, including a garment manufacturer, metal fabricator, and a large chemical plant located about nine miles south of Aberdeen. Vista's economic impact on the Aberdeen community is significant. In 1988, the company spent about \$22 million on salaries and benefits and purchase of local goods and services.

Vista's operation covers over 150 acres in the southwestern part of Aberdeen. The plant is located in an area zoned for industrial operations. Land uses in the vicinity of Vista's plant are diverse. To the south and west of the plant is agricultural land. To the north and northwest are residences, commercial businesses, and another large plant which manufactures auto exhaust systems. To the east are numerous residences, some of which abut Vista's property. Estimates of the number of residents living within a one-mile radius of the plant range from 1500-2500. Prevailing winds in the area blow from the southwest toward downtown Aberdeen.

None of the individuals interviewed spoke negatively about Vista's relationship with the community, and all reported a noticeable increase in the plant's community outreach efforts over the past year or two. Several local citizens stated that, in the past, Vista kept a low profile and communicated minimally with community residents about their operations. However, this attitude changed after SARA Title III. Several citizens noted that Vista has made a concerted effort to educate residents about plant operations over the past year.

Local officials and emergency responders report good working relationships with Vista, and describe the company as cooperative and forthcoming relative to other companies in the community. Vista is an active member of the county's local emergency planning committee (LEPC), which was established in 1987.

*the CPER effort
and 2000 lawsuit*

alleged

4.0 Recent Risk History Involving the Community, the Facility, and Vinyl Chloride alleged by EPA to be

Throughout the 1970s and early 1980s, the Aberdeen facility, then owned by Conoco, experienced a series of VCM releases beyond the limits imposed by federal air toxics regulations (EPA's NESHAPS for VCM, 40 C.F.R. 61, Subpart F). The releases ranged from 3 pounds to 357 pounds, with one accidental release of 25,500 pounds in 1979. In February 1984, EPA brought suit against Conoco for these regulatory violations (Civil Action EC-84-37-NB-D). Later that year, Vista was incorporated, assumed operation of the facility, and voluntarily became a party to the suit. By August 1985, Conoco and Vista agreed to settle out of court, pay a \$100,000 penalty, and submit a facility compliance plan to EPA. The projects proposed in the compliance plan, which consisted of improvements to relief valves and other facility modifications, were completed by Vista by December 1986. However, before completion, two non-routine releases of VCM occurred in July and August 1986, causing the state of Mississippi to file a complaint. Vista settled with the state for \$2,000, and the case was closed in November 1987. The current plant manager reports that there have been no releases of VCM during his tenure, which began in February 1988. Routine

Despite the frequency of such incidents during Conoco's operation of the plant, citizens of Aberdeen have not brought private actions against Conoco or Vista. In fact, the community representatives interviewed did not recall any major incidents involving the plant, vinyl chloride or other chemicals. Some minor incidents were mentioned, however, no areas of the Aberdeen community have ever had to be evacuated because of a chemical incident. The Aberdeen Fire Department recalls responding to an incident at the plant once several years ago. The incident turned out to be minor and was controlled by Vista personnel.

The major complaint about the impact of Vista's operation on the community pertains to fallout of PVC resin dust. Neighbors downwind of the plant have long complained about fallout of white PVC resin dust from Vista's plant, which settles on their homes, automobiles, and yards. Vista has reassured residents that the fallout, although a nuisance, is not harmful. As discussed further in Section 7.0, the company is now addressing the problem by installing dust collectors. Other than the PVC dust problem, residents have not expressed great concern about chemicals in the community, and believe that Vista and other area chemical plants operate safely. The low level of chemical concern among residents is also reflected by the lack of environmental groups in the community.

Although community residents are not noticeably concerned about health risks from the plant at the present time, in the late 1970s, a group of Aberdeen citizens asked the state to

NOTE: Area residents recently became concerned over the emissions from a chemical plant located approx. 3 miles from the plant. Also we recently had discussions with a neighbor concerned with PVC dust in her yard.

conduct a health study to determine the underlying cause of a suspected higher than normal incidence of cancer among residents. An investigation was conducted in 1980 by the state health department, and the federal Centers for Disease Control (CDC) tabulated and analyzed the statistical data for the state. The study found no increase in the overall incidence of disease in Aberdeen residents as compared to Monroe County residents as a whole.¹ Although the study found slightly elevated cancer rates in two areas of the city, no links to any environmental or occupational factors were made.

5.0 Implications of SARA Title III for the Company

Prior to the enactment of SARA Title III, several factors influenced Vista's risk management efforts at the Aberdeen facility. These include the promulgation by OSHA in 1974 of a workplace standard for VCM exposure; EPA's enactment in the mid-1970s of National Emissions Standards for Hazardous Air Pollutants (NESHAPS), which included a standard for vinyl chloride; and the lawsuit filed by EPA against Conoco in 1984.

In addition, the Bhopal accident in December 1984 triggered several initiatives at Vista corporate headquarters, including a requirement that all facilities evaluate their activities to identify potential accident hazards. This initiative, which is discussed further in section 6.0, has since been reinforced by the enactment of SARA and the development of CMA's "Responsible CARE" program. Vista had joined CMA in 1988 just ~~after~~ ^{before} adoption of the "Responsible CARE" program became a CMA membership requirement. According to corporate officials, Bhopal and SARA made Vista and other chemical producers realize that changes were needed in both external and internal aspects of corporate risk management.

The firm has made a number of other efforts partly as a result of SARA, including hiring an additional person for the corporate communications staff, and providing plant managers with ^{increased} media and communications training. Vista is considering establishment of a corporate headquarters safety function to provide continuing oversight and guidance on plant safety matters. The company is ~~also~~ ^{has} formulating a new environmental policy which stresses development of programs which strive to

¹ Glyn G. Caldwell, M.D., Chief, Cancer Branch, Bureau of Epidemiology, Centers for Disease Control, Atlanta, Georgia. Letter and tables describing results of CDC review of cancer incidence and mortality data for Aberdeen, Mississippi, addressed to Charles A. Cook, M.D., M.P.H., Assistant Chief, Bureau of Disease Control, Mississippi State Board of Health, Jackson, Mississippi, February 6, 1980.

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protect environment, health, and safety throughout a product's lifecycle. The first principle of the proposed environmental policy is that "Vista will inform and educate its employees, surrounding communities, carriers, customers, contractors and government agencies of the health and environmental hazards of the chemicals we make, use and sell." The second principle is that Vista pledges to continuously reduce the risks to its employees and neighboring communities.

of the
10 in the
policy

at its plant locations.
Vista currently reports on approximately 60 chemicals under SARA and other regulatory programs such as TSCA and OSHA's Hazard Communication Rule. *emissions of* These multiple regulatory requirements are being incorporated into a new Product Stewardship Program (PSP) for new and existing chemicals. *there* The PSP is being designed to assure regulatory compliance and coordination, and to assure reduction of product liability potential. Vista's corporate environmental quality manager and corporate counsel, ~~who are currently the PSP~~ have been holding seminars for management personnel on product liability "awareness issues". The core of the product review process is the internal review procedure, which focuses on regulatory compliance (e.g. TSCA, OSHA, SARA, etc.); MSDS requirements; hazard and design assessments; and feedback on potential hazards and liabilities from various company personnel. The goal is to manufacture products which meet all applicable regulations and ~~are least likely to incur~~ *manage* liability. This process will also be used to improve Vista's efforts at waste minimization, and improve cost-effectiveness in implementing regulatory compliance functions. Corporate environmental staff currently review the SARA §313 reports from each plant, and develop MSDSs for the chemicals produced and sold.

(NO CAPS)
PSP is not
our acronym)

the
program

as well as other regulatory actions and trends

SARA's §313 reporting requirement has motivated corporate headquarters to set a company-wide waste minimization goal, which is part of the company's overall "goals system". (The waste minimization goal is not limited to chemicals subject to §313 reporting, but is expected to include all chemicals of environmental or safety concern.) Under this system, each plant manager must set safety/environmental goals for his plant, and also adopt any new corporate goals. Proposals for "non-routine" capital investment to improve safety and environmental protection are expected to be developed by each plant to achieve the established goals. Since goal-setting is mandated by corporate and plant officials work closely with corporate officials to develop waste minimization goals and plans, plant officials note that approval of capital requests for safety and environmental expenditures is easier than before the establishment of safety and environmental goals. Compensation of top plant officials is also tied to achievement of their plant's goals.

After SARA, Vista undertook a variety of activities to improve relations with the communities where their facilities

operate. Largely because of SARA's disclosure requirements and fear of potential misunderstanding of chemical information by citizens, Vista decided to improve its communications program to educate the community. The company has also made a commitment to continuous improvement of safety conditions and environmental protection. This commitment will soon be made public with the formal announcement of the new corporate policy for environmental protection, which includes a waste minimization mandate for all Vista facilities.

Aberdeen plant officials have, in conjunction with the corporate environment staff, initiated several measures, including new communications programs and the formation of innovative "focus groups" of community residents. Headquarters has supported initiatives such as those taken at Aberdeen, and is using Aberdeen for positive reinforcement of initiatives at other plants. Given the positive results of the Aberdeen program, corporate officials now see the benefits of better community relations and the need to develop new roles for its plant managers and employees.

6.0 Voluntary Measures to Reduce Accident Risks to the Community

Following Bhopal, Vista ~~corporate staff~~^{manufacturing management} required that safety evaluations be conducted at each facility. This program has been maintained, indeed reinforced by, the enactment of SARA and the Responsible CARE program developed by CMA. The safety program requires each plant's engineering and operations staff to:

- o review chemicals onsite for their hazardous attributes (e.g. toxicity, flammability, etc.);
- o evaluate processes to determine where the potential for accidental releases exists;
- o prioritize the accidental release risks identified; and
- o make process and operational changes to reduce or eliminate accident risks with the highest priority.

In response to the post-Bhopal ~~corporate directive~~^{risk management efforts}, a team of process engineers, operational and safety personnel at the Aberdeen plant identified each chemical onsite that could pose an accidental release risk, using flammability, toxicity and other hazard criteria. The team also evaluated the safety systems for accident prevention and emergency response, and identified points of concern. The plant team assigned responsibilities for addressing the points of concern, and implementation is reviewed at monthly meetings of the plant's Safety Committee, which includes ~~members of~~ all department heads ~~at the plant~~. The Committee reviews the assigned safety projects and relevant accident records, and reports periodically to environmental staff at headquarters in Houston.

Since accidental VCM release risks are largely confined to the storage and reactor stages of the VCM process described in section 2.0, Vista has focused its new accident-reducing safety measures in these areas. Recent measures taken by Vista to reduce the risk of an accidental release of VCM include:

- (1) Storage - Potential accidental ^{caused by} releases in ^{unloading and} shipping and handling phases, and from storage tank rupture, have been reduced by installation of a "deluge system," which is a water sprinkler system for fume and fire suppression, and a leak monitoring system (gas chromatograph) for the storage tanks and pipes which feed VCM to the ten reactors.
- (2) Reactors - Potential accidental ^{Reaction} releases can occur if electric power is lost and the reactor mixing and cooling process is interrupted. To reduce this risk, a backup electric power generator has been installed for use if a power outage occurs, and "kill agents" have been made available for injecting into the reactors to quickly shut down the reaction process. Special procedures have been developed for use of the "kill agents" to terminate a batch process when bad weather threatens the power supply needed for cooling the reactors. The threat of loss of power has economic as well as safety implications, since loss could lead to a defective batch of PVC slurry.

As noted earlier, some of these measures were implemented in response to OSHA and EPA VCM standards, the firm's own safety engineering practices, and the compliance agreement between Conoco, Vista and EPA. Others were instituted as a result of Bhopal, Responsible CARE and SARA reporting requirements.

In addition, ~~since Bhopal~~ valves and other points of concern are ~~now~~ routinely checked manually for leaks. Previously, Vista continuously monitored for leaks which could lead to violations of EPA or OSHA VCM standards or to accidental releases which could develop from a leak. The monitoring system is designed to signal the process control room when VCM leaks reach a 2 ppm level inside ~~or outside~~ the plant, and to indicate the location of the leak. It should be noted that stringent monitoring for leaks is required by OSHA and EPA NESHAPS standards.

^{- Community awareness of existing efforts.}
Since SARA and, in particular, the §313 emissions reporting requirement, Aberdeen plant officials have placed greater emphasis on safety and waste minimization. In an effort to forestall community concerns about accidental releases and routine emissions and demonstrate credibility, the plant has made a commitment to the community to continue improving in these areas. The Aberdeen plant's chief process engineer is currently developing a safety audit system for future use, along with procedures for training and equipment use. Plant officials

stated that they "don't have to economically justify safety initiatives where the risk level is high." Safety-improving expenditures of up to \$2,000,000 proposed by the plant manager have been approved by headquarters without requiring cost-benefit, profit or other economic justifications because of the high level of concern about public safety. Other safety-related expenditures, noted earlier, included \$500,000 for chemical release prevention (e.g. remote shut-off valves, deluge systems, leak sensors); \$20,000,000 for a variety of "environmental improvements" including those mandated by the compliance plan required by EPA; and \$3,300,000 for safety upgrades ~~of the~~ ^{to} electrical system.

The Aberdeen plant has also sought to expand the buffer zone around the facility in order to reduce accident risks to residents. Since 1984, five homes near the plant have been purchased, and Vista hopes to purchase others at the plant boundary. Last year, the plant purchased a 20-acre parcel of land from the city near the plant's railroad spur.

7.0 Voluntary Measures to Reduce Routine Release Risks to the Community

As mentioned in Section 5.0, annual emissions reporting under SARA led to a corporate mandate for waste minimization at Vista. Each plant must identify and inventory all chemicals and emissions of concern and report to the corporate environmental quality manager by September 1989. Based on this inventory, plants must prioritize their waste minimization efforts, and develop plans and budget estimates for these priority efforts to be implemented in the three-year period 1990-1992. Plants are working on the waste minimization goal in close consultation with corporate officials, particularly the ~~environmental quality manager~~ ^{corporate environmental staff.} and the general manager for manufacturing (two general managers have responsibility for ~~all~~ seven Vista production facilities). The goal-setting process ensures that by the time the budget is reviewed at headquarters, the projects to be funded will have been reviewed and guided by several corporate officials who "know which projects feel right."

Since ^{increased its efforts} enactment of SARA and the §313 reporting requirements, Vista has ~~voluntarily acted~~ to "go beyond compliance" with the OSHA and EPA NESHAPS standards for VCM. The Aberdeen plant has made significant reductions in the total annual amount of VCM routinely released from the plant stacks or permitted sources, and from the valves, flanges and other sources of fugitive ^{before} emissions of VCM. This voluntary effort began ~~immediately after~~ the Aberdeen plant filed its first §313 report for 1988, which showed an estimated total release to the atmosphere for the year of approximately 121,000 pounds, as well as releases and discharges of several other chemicals in much smaller quantities. A significant portion of the reported emissions were "fugitive" emissions based on calculations using ⁹ standard EPA Emission Factors, not actual measurements.

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identity actual

In 1988, the firm took several steps ~~to reduce~~ fugitive emissions of VCM. The firm hired a consultant who measured leakage rates from plant components which were sources of VCM fugitive emissions. These measurements allowed a more accurate estimate of fugitive emissions than the EPA ~~assumptions and~~ emission factors models used in 1987. Vista also continued its routine evaluation of plant components (e.g. flanges, seals, valves) by measuring VCM concentrations in the air around the components, and continued its routine monitoring of VCM leaks established under the OSHA workplace and EPA NESHAPS standards. These measures enabled Vista to identify and repair leaks and replace problem equipment (such as replacing gate valves with plug valves). As a result of these measures, the plant has reported a substantial reduction in the fugitive emission component of its VCM releases for 1988 -- from 29,521 pounds in 1987 to 3,008 pounds in 1988.

In 1988, Aberdeen plant management also worked to reduce the stack emissions component of its VCM releases ~~by running the condenser system at higher temperatures,~~ allowing more VCM to be stripped from the PVC slurry. Although this measure is costly in terms of energy use and production loss, and involves a delicate tradeoff between high-temperature stripping and product quality, this approach has achieved substantial reduction of VCM stack emissions -- from 90,488 pounds in 1987 to 73,554 pounds in 1988.

modifying the stripping process to

As a result of this two-pronged approach, Vista has reduced total VCM routine releases from about 121,000 pounds in 1987 to an estimated 76,500 pounds in 1988. In addition, the plant continues to operate well within OSHA's VCM workplace standard of 1 ppm per 8 hour period, based on measurements using gas chromatograph and ~~badge~~ monitoring. The Aberdeen plant is also in full compliance with EPA NESHAPS standard and state limits on VCM emissions to the atmosphere. The 76,500 pounds emitted in 1988 is well under the 214,000 pound threshold permitted by these agencies.

personnel exposure

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Vista is not limiting its efforts to SARA designated chemicals, but is addressing all chemical wastes it believes merit reduction because of their harmful or nuisance characteristics. In addition to reductions in VCM emissions, Vista has reduced amounts of other chemicals reported under SARA §313. Between 1987 and 1988, Vista reduced by more than 50% the amount of barium and lead waste transferred offsite for disposal. These reductions are largely due to ~~the use of these wastes by~~ other firms for their use in compounding PVC products. Finally, operation of the dryer system that transforms PVC slurry into powdered resin has led to ongoing emissions of particulates (PVC resin dust) which has annoyed community residents. To reduce this non-hazardous "nuisance" to the community, Vista is installing a new baghouse and other dust collectors at a cost of \$1,550,000. Vista is investing in these devices even though the

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Recycling these chemicals into products which can be sold

drives

improved

PVC resin dust, which is not subject to SARA §313 reporting, is well within the state's limit for particulate emissions.

Vista has set a goal ^{to continuously reduce} of ~~zero~~ emissions of VCM over the long term, and announced its commitment to continual minimization of all wastes. For 1989, it anticipates use of modified procedures for existing equipment to achieve even further VCM reductions without harming product quality. Thereafter, plant officials anticipate further recycling and the purchase of new technology to attain additional reductions of all wastes, ~~and have been~~ which is supported by the firm's vice president ^{of operations} ~~for manufacturing~~ at corporate headquarters. ^{senior}

8.0 Voluntary Measures to Improve Emergency Response Planning

<sup>VCM
Railcars</sup> Prior to SARA, Vista's efforts to plan for a chemical emergency and coordinate response activities with the community consisted primarily of informal mutual aid agreements with area fire departments. Vista has assisted local emergency personnel in responding to offsite chemical incidents, including a ~~release~~ ^{Department} of ~~VCM from railroad tanker cars~~ on-route to the Aberdeen plant from a non-Vista source in 1988. The incident occurred in a very rural area of Monroe County, and required evacuation of about ten residences. Vista responded by informing the railroad company of the appropriate response measures, notified ChemTrec, and provided technical expertise at the site to ~~halt the VCM leak.~~ ^{Determine if VCM was leaking.}

Vista's corporate officials expect each plant's safety director to work closely with their LEPC. The safety director at the Aberdeen plant has considerable experience in emergency response planning, acquired during his prior employment at a chemical plant in West Virginia's Kanawha Valley. He is a member of the Monroe County Local Emergency Planning Committee (LEPC), which was formed in the fall of 1987. The LEPC has 17 members which represent: industry (four member companies including Vista), county sheriff, local fire departments (two full-time, one volunteer), hospital, radio, local newspaper, soil conservation service, county forester, and a local farmer's cooperative. The committee is chaired by the coordinator of the county's 13 volunteer fire departments, who is also the county's unofficial emergency management coordinator. Monroe County does not have an emergency management agency because county government does not feel one is needed.

The most committed members of the LEPC, which meets monthly, are the four industry members, the Aberdeen Fire Chief, and the LEPC Chairman. The LEPC members interviewed spoke highly of Vista's representative on the LEPC, his contributions to the LEPC, and the committee's working relationship with the company. Vista is one of the most active industry members, and the LEPC

- What Does
This mean?

members interviewed agree that Vista plays a key role on the committee.

A key area of emergency planning concern for the LEPC is the transport of chemicals, especially VCM, ^{near} ~~through~~ the community by rail. Large volumes of VCM are shipped to Vista in railroad tanker cars. Vinyl chloride is the fire department's biggest concern from a public safety perspective because of its flammability, ~~high~~ toxicity, and the large quantities shipped by rail. In addition, several residences and other sensitive receptors are located in the vicinity of the area where Vista parks empty VC tanker cars. Because of this public safety concern, the fire department has conducted HazMat incident response exercises involving the tanker cars, however, Vista or other local agencies have not been involved in these exercises.

Emergency Plan Development Under SARA

After a period of weekly meetings and intensive planning and writing, the LEPC submitted their comprehensive ERP to the state by the October deadline. The plan provides integrated response actions for twelve facilities in the county including Vista's. Since the LEPC has no computer system, the LEPC Chairman used his own personal computer to write the plan. The Risk Analysis Subcommittee, one of the LEPC's six subcommittees, performed a hazards analysis as part of the emergency planning process. The key to this activity was the set of facility risk analyses performed by an environmental engineer from the other major chemical plant in Monroe County. The risk analyses involved a visit and survey of each of the twelve facilities in the county. For planning purposes, the LEPC used a vulnerable zone of 3/4-mile radius around each facility. No chemical release dispersion or "plume" modelling has been performed by the LEPC.

Vista's corporate environmental quality manager has worked with each plant and private contractors on modelling of emergency release scenarios to determine offsite consequences of potential accidental releases of VCM and other chemicals, and appropriate strategies for emergency planning and response. The results of the modelling have helped plant officials and the corporate environmental quality manager prioritize efforts for mitigation of potential risks. The plant has no plans to install ~~SARA~~ ~~computerized~~ computerized monitoring/graphic display systems, since these are believed to be useful primarily for acutely toxic substances, and VCM is considered a chronic health hazard.

Notification and Warning Systems

Since SARA Title III, Vista has installed a rotating siren in the southeastern part of Aberdeen, which is the area most vulnerable to releases from their plant, to notify and inform the community about chemical and weather emergencies. The warning siren is capable of issuing spoken messages as well as sounding an alarm. During the next year, Vista plans to install one more

siren to the northwest of the plant. The main intent of the warning sirens is to provide coverage of residents who would most likely be impacted in the event of a release. The city has also discussed the possibility of installing a third siren. The city maintains and operates the system, which was given to the city by Vista, and it is tested monthly. The LEPC is in the process of establishing a 911 emergency notification system at the police dispatcher's office, which will simplify reporting of chemical releases to local emergency responders.

Training and Drills

The LEPC has not staged any chemical drills to date. However, the LEPC is currently planning a table-top drill, which is scheduled to take place later in 1989. The drill may be staged at Vista or may involve a train derailment. Vista held two evacuation drills in 1988 for its workforce only, and plans to hold first aid and other special drills for its employees, using a hypothetical chlorine leak.

In the event of an emergency at Vista's Aberdeen plant, safety officials plan to rely primarily on their own vinyl unit personnel. Local emergency responders would be called in only if the response could not be handled by plant personnel alone. In the event of an onsite release, safety personnel would identify the nature of the problem, its location, wind direction and speed, and other conditions governing dispersion and exposure, and determine whether evacuation of employees and/or residents is necessary. ~~The monitoring system would sound a plant-wide alarm in the event of a 2 ppm VCM concentration reading.~~ They would then turn in the appropriate alarm within the plant or to the community. *plant* *may want to define better!*

The plant's fire brigade receives annual training, with new hires receiving some basic training for hose fires, liquid petroleum-type fires and use of respiratory apparatus. Some employees have been sent to safety training sessions outside the firm. Presently, two plant employees, one of which is the safety director, are fully trained to respond to HazMat incidents. Vista plans to provide at least one other individual with HazMat training. *off-site*

Although none of the Aberdeen Fire Department's 13 fulltime firefighters have received HazMat training, the department plans to have all fulltime firefighters attend a certified HazMat training course over the next few years. The LEPC intends that all county firefighters, including volunteers, will eventually have at least the basic 40 hours of HazMat training. Some of the volunteer firemen in the county are employees of Vista or the other large chemical company in the county and have knowledge of chemicals from their jobs. Although Vista has not provided any type of hazardous material training to area firefighters, they have invited local emergency responders onsite for a plant tour and slide show.

The LEPC has discussed the possibilities of forming a HazMat team which would include industry and local emergency responders. ~~Vista has indicated that they would be willing to contribute to the cost of a HazMat vehicle for the team, however, it would probably be housed and maintained by the fire department.~~ The LEPC currently has no plans to purchase a computer, however, they have discussed purchasing a mobile computer and emergency management software for the HazMat vehicle.

9.0 Voluntary Measures to Deal with Community Perceptions of Risk

Corporate communications staff view SARA as necessitating a continuing company-community relationship, much like OSHA's hazard communication rule has done for the company-employee relationship. Corporate communications has developed written and video materials for use at each plant, and enlarged its small staff by one person (to a total of three), partly to deal with safety and environmental communications since SARA enactment. Its public relations manager, together with the corporate environmental quality manager, worked with each plant to evaluate foreseeable public responses to §313 reports, determined what each plant should do in the way of communications, and guided the development of focus groups comprised of workers and community residents. Overall, each plant is in charge of its communications program, which ~~always~~ starts with employees, and then includes the community. Each plant also develops and files its §313 report on its own, although review and guidance is available from corporate officials.

Since enactment of SARA, Vista, and in particular, its Aberdeen plant, have embarked on a major effort to communicate with and educate the public about chemical risk issues. The Aberdeen plant program is viewed by corporate headquarters and plant officials as a success. It has been supported by the environmental quality manager at headquarters, but is directed by the Aberdeen plant manager. Both officials are highly committed to opening up communication with the public and this is reflected in the enthusiasm and thoroughness with which the program has been implemented in Aberdeen.

This initiative was stimulated in part by the implications of SARA §313 reporting, namely the need for the plant to educate the public about the risk issues inherent in its §313 report data in order to prevent misunderstandings and controversy. But it was also stimulated by the genuine desire to improve relations and communication with the community on the part of the plant manager and his senior staff. Membership in CMA, and use of CMA training programs and manuals on risk communication (e.g. Guide for Plant Managers), also proved useful in reinforcing and designing this effort, and information from the Vinyl Institute

Corporate environmental manager or plant manager

and Vista suppliers (e.g. chlorine producers) has also been used in the program.

At Aberdeen, the plant manager organized two "focus groups," one for local community residents living near the plant and one for employees and their spouses. At least two Vista officials (the ~~plant~~ manager and a corporate specialist in public communications) met with each focus group to discuss and frame risk issues and secure feedback. The feedback has been evaluated for the purpose of responding to public concerns. Thus far, the major feedback from citizens has concerned annoyance with the white PVC resin dust. This has spurred the plant's decision to invest in technical measures to significantly reduce dust levels, as previously discussed. Some of the community representatives interviewed who attended the focus group meetings last spring recalled that they were well-run and informative, and felt that the Vista representatives were genuinely interested in their questions and were forthcoming in their responses.

In the summer of 1988, the Aberdeen plant sent out a letter and brochure on "Vista and the Community" to Aberdeen residents, and held two public meetings. The first round of letters was sent to the approximately 350 households located near the plant. The letter, which was from the new plant manager, expressed Vista's commitment to the Aberdeen community, and encouraged residents to call if they had any questions or concerns. The August 1988 letter was shortly followed up with an invitation to a September public meeting to be held at the Aberdeen high school. The public meeting was attended by only one individual, who wanted a job. After the disappointing turnout, plant officials regrouped and decided to send a letter and follow-up invitation to a public meeting to all Aberdeen residents. About 40 people attended the second public meeting, which was held in March 1989. At the meeting, Vista discussed their operations, safety and emissions reductions measures undertaken, and the plant's §313 emissions. The audience was very low-key, and no serious concerns about the plant's operation were raised.

Another recent initiative at the Aberdeen plant involved the formation of a SARA Communications Team in April 1988, prior to the release of the plant's first §313 report. The team of 8 to 12 employees included the plant manager, employee relations director, superintendent, and many hourly employees. The team developed a communications plan and materials, including a video cassette film, and has scheduled several communications events. These include meetings with focus groups of employees and an open house for employee families to visit the plant. Also scheduled were meetings with focus groups of community residents and officials, the LEPC, the School Board, and the Chamber of Commerce. The media are invited to all of these events.

Safety Director, front-line supervisor

The meetings have usually involved Vista presentations of factual information about the plant, its activities, risk issues, how to understand and perceive the risk issues, feedback from the invitees, and plant tours. Information about VCM plays a central role in the communication process. Its toxic attributes are presented, along with a discussion of monitoring and control measures, worker and community health data including Vinyl Institute studies of workers and communities exposed to VCM over a 50-year period, plant monitoring data (concentration levels at the plant boundary), information on the economic benefits of the plant for the community, and information on the firm's regulatory compliance and new efforts to reduce VCM exposure beyond the required levels.

this has recently been sold!

Other events initiated by Vista include an open house for employees at the firm's truck terminal; a meeting with the local medical community which involved the plant nurse and the firm's occupational physician from corporate headquarters; an open house for local educators; and presentations at the Rotary and Lions Clubs and the 20th Century Club (service organizations). Attendance at the focus groups and other meetings has been variable, with open community meetings attendance ranging from one person to over 40. Although other firms subject to §313 are located in Aberdeen, there have been no joint efforts and Vista has acted on its own.

Given the program's success thus far, and the commitment of the plant manager and his staff, it is expected that the program will be continued at Aberdeen and replicated at other Vista plants. The corporate communications staff closely observed the communications program run by the manager of the Aberdeen plant, and have sought to convey this experience to other Vista plants, which are beginning to respond. For example, the Lake Charles, Louisiana plant, which produces VCM, has set up a "community committee" which includes medical experts, to review §313 issues including reduction of VCM releases and exposure in ~~particularly~~ ^{to} ~~exposed~~ neighborhoods. ^{nearby}

All community representatives interviewed noted that Vista substantially increased their community outreach and public relations efforts since SARA Title III. Those interviewed cited the focus group meetings, plant tours, and the videotape as examples of the company's recent outreach efforts. However, the citizens interviewed feel that, in general, Aberdeen residents are apathetic about chemicals in their community and planning for chemical emergencies. They attribute this complacency to the fact that no plant accidents or releases have ever been shown to have had offsite impacts. No members of the general public have attended any of the LEPC meetings, nor have there been any requests for information. Some residents believe that Aberdeen citizens need to be made more aware of the hazards of chemicals in their community, and the appropriate measures to take in the

event of a chemical emergency. The LEPC plans to develop a brochure on "What to do in the event of a chemical emergency," which would be disseminated to area residents. The distribution of the brochure would be accompanied by radio and newspaper spots on the background and purpose of the brochure.

10.0 Role of Technology Transfer

The transfer of technical information on safety and risk plays a vital role in Vista's commitment to continued reduction of risks and good community relations. Vista's customers are increasingly seeking information on regulatory status and compliance requirements for certain chemicals, and on safety in their own plants. As a result, Vista has expanded the information provided in some of its own MSDSs. For example, special warnings about possible unreacted VCM in PVC products are now provided in the MSDS, even though it is generally acknowledged that such VCM risk potential in PVC products is de minimis.² Vista also now references the relevant sections of SARA Title III to which the chemical is subject in the MSDS. Beyond the chemical information provided in the MSDS, further information is provided to specific customers on request, if there is a valid business reason. ~~This is a relatively new policy, reflecting a change over prior legal advice not to provide such information.~~ Vista itself has solicited safety information in addition to the MSDSs from its suppliers of chlorine and certain other chemicals.

Always
VISTA
policy!

As previously mentioned, Vista became a member of CMA in 1988. CMA provides member companies with information on regulatory, environmental, safety, and community relations issues. Vista adheres to all CMA policies, and has made a concerted effort to adopt the "Responsible CARE" program. Corporate communications officials have attended CMA training sessions and conveyed the information and materials gained at these seminars to the plant officials. Vista is also a member of Vinyl Institute, which tracks and provides member companies with current information on issues pertinent to the production and use of vinyl chloride and polyvinyl chloride. Some of Vista's plants (Lake Charles and Baltimore) also belong to local industrial consortia, which share information and work jointly at monitoring and communications. In Aberdeen, the new safety director brought

² Since Vista captively uses most of the VCM produced at the Lake Charles, Louisiana plant to make PVC at its Oklahoma and Aberdeen facilities, there are essentially no external VCM customers who need operational or other safety guidance from Vista. However, sale of PVC products by Aberdeen involves provision of an MSDS and other precautionary information regarding toxics released when PVC is burnt, and specified uses for various grades of PVC.

with him considerable knowledge, experience, as well as written materials about chemical emergency planning acquired during his previous employment in Kanawha Valley. Plant officials are applying this information to the situation in Aberdeen and have provided their expertise to the Monroe County LEPC.

11.0 Conclusions

Prior to the enactment of SARA Title III, several factors influenced Vista's chemical risk management efforts at the Aberdeen facility, including OSHA and EPA vinyl chloride standards and a lawsuit filed by EPA against Conoco in 1984. Chemical accident risks came under closer scrutiny after Bhopal when corporate headquarters required each facility to examine their activities, identify potential hazards, and reduce accident risks.

was a factor in motivating a corporate

Largely due to emission reporting requirements under SARA, Vista has made a concerted effort to improve community relations through a series of community outreach and education initiatives. SARA ~~also prompted a corporate mandate for~~ waste minimization at all plants which has resulted in significant reductions of VCM (>35%) as well as other chemicals in the past year at the Aberdeen facility.

The implications and impacts of SARA on Vista are briefly summarized below as they relate to the basic corporate functions of assuring organizational reliability, facility productivity and safety, good community relations, and effective loss control. However, it should be noted that these initiatives cannot be totally attributed to SARA, but arise from a combination of developments including SARA Title III.

Organizational Reliability. Formulation of a new environmental policy stressing protection of environment, health, and safety throughout a product's lifecycle, education of communities, customers and government agencies of the environmental and safety aspects of company operations, and continuous safety and environmental improvements; possible establishment of corporate-level safety staff; corporate mandate for waste minimization; development of a Product Stewardship Program ~~(PSP)~~ to assure regulatory compliance and coordination; adoption of CMA's "Responsible CARE" program; corporate environmental staff review of SARA §313 reports from each plant and development of MSDSs; use of corporate-mandated "goals system" whereby plant managers set safety/environmental goals for their plants which include SARA-related goals; compensation of top plant officials tied to achievement of their plant's goals;

Facility Productivity and Safety. Investigation of all Vista facilities for potential accident hazards; technical changes in

plant operation and capital investments to reduce accident risk at the Aberdeen facility; development of a safety audit system and procedures for training and equipment use at facility; reduction of fugitive and stack emissions of VCM; reduction of PVC resin dust emissions with the installation of dust collectors; modelling of emergency release scenarios to determine offsite consequences of potential accidental releases and appropriate emergency response strategies; conduct of emergency response drills for company workforce; expansion of buffer zone around the facility by purchasing nearby residential houses;

Good Community Relations. Hiring of an additional person for the corporate communications staff; corporate provision of assistance and support to facilities in the development of communications plans; evaluation of possible public response to SARA S. 313 reports prior to report release; implementation of extensive community relations and education efforts including organization of "focus groups" of employees and community residents, dissemination of a brochure on Vista to community residents, and conduct of public meetings to present information about health and safety risks and plant activities; installation of ~~baghouse~~ ^{Oryer} and dust collectors to reduce emission of PVC resin dust in response to community complaints; commitment to the community to continue improving emissions control, safety, and waste minimization; installation of emergency warning sirens in the community; participation in LEPC;

Effective Loss Control/Profit Maximization. Revision of MSDSs to include additional information on regulatory compliance and safety issues; development of a Product Stewardship Program which will reduce of product liability potential; commitment to environmental, health, and safety concerns throughout the product lifecycle as expressed in the new environmental policy.

12.0 Preparation of this Case

12.1 Authors

Michael Baram, Co-Principal Investigator and
Professor, Boston University Law School.
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Center for Environmental Management.

12.2 Persons Interviewed at Vista Chemical Company, Houston, Texas on June 22, 1989.

Thomas Grumbles, Environmental Quality Manager.
Thomas Huffman, General Manager of Manufacturing,
VCM and Polymers.
Michael Reynolds, Manager, Public Relations.

12.3 Persons Interviewed at Vista Polymers, Aberdeen, Mississippi on June 13, 1989.

Rendell Robert Seymour, Plant Manager.
~~Rendell~~ ~~Rendell~~ Newton, Chief Process Engineer.
Bruce Trego, Safety Director.
Frank Jeanson, Environmental Coordinator.
Paul Kober, Operations Superintendent, Vinyl Department.

12.4 Persons Interviewed in the Community of Aberdeen, Mississippi, June 7-8, 1989.

Wilchie Clay, City Alderman, Aberdeen, and Vista focus group participant.
John P. George, Fire Chief, Aberdeen Fire Department, and LEPC member.
Jerome Huskey, LEPC Chairman, Coordinator of Volunteer Fire Departments, and Monroe County Emergency Management Coordinator.
Grace Moore, Citizen, Merchants Welcome Club and President of 20th Century Club, Aberdeen, Mississippi, and Vista focus group participant.
William Tisdale, Executive Director, South Monroe Chamber of Commerce, Aberdeen, Mississippi.

13.0 Documents Collected

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