

To: Debs Gamblin  
Mike  
From: Mike Reynolds  
Date: February 25, 1986

Interoffice  
Communication

Subject: "If-needed" statement on chemical air emissions

After the five part series on chemical air emissions in The Houston Chronicle last week, John Burns asked that questions and answers on the subject be prepared. Tom Grumbles and I have put together the attached "Q&A" and reference.

With your approval of the document, we'd like to issue this to each plant manager. Because it repeats much of the same information in the Bhopal "if-needed" statement, we'd ask plant managers to discard that statement.

cc: Dave Kuhn

Jim Rutledge

*Mike  
I discussed my  
comments with  
Tom & please  
get with them  
to review them  
I thank -*

*Better  
call this response to  
Mike please. I thank  
they are rushing this  
one.*

UHR 5219

**If-asked statement  
AIR EMISSIONS  
2/25/86**

**Does Vista use or manufacture hazardous chemicals?**

Vista Chemical uses and manufactures a number of chemicals in volumes large enough to be of concern in the event of an emergency. However, these chemicals are strictly controlled and monitored. Our plants have been carefully designed and built to handle them safely. Our employees who work with these chemicals have received detailed special training. All of these precautions make an accident which could injure a member of the public extremely unlikely.

**Do you routinely release any of these chemicals to the atmosphere?**

Yes, but only in amounts permitted by state and federal environmental agencies, and not in amounts that would cause injury to the public.

Air emissions from our manufacturing processes are regulated by state and federal environmental agencies. These agencies have issued permits to Vista regulating our air emissions. Vista currently operates under 43 different environmental permits which specify allowable air emissions for chemicals ranging from sulfur dioxide and nitrogen oxide, which come from fuel burning processes such as steam generation, to hydrocarbon products. In addition, two compounds produced and used extensively by Vista --benzene and vinyl chloride monomer--are stringently regulated under the Clean Air Act as hazardous air pollutants.

The amount of permitted emissions is generally determined by health effects data and by best available control technologies for our manufacturing processes.

**How can you justify releasing these hazardous chemicals, some which are known cancer-causers, into the atmosphere on a routine basis?**

Both Vista Chemical and the EPA believe that the permitted quantities will not harm the employees who work in our plants or members of the public and the environment nearby.

The chemicals which we use or manufacture are not exotic, little understood chemicals. They are common chemicals used for years throughout the industry and which have been studied at length. The effects of exposure to them are well known. Safety and health precautions for properly handling them have been developed, installed and regularly tested at our plants.

Our plants' emissions are controlled so that the concentration of cancer-suspect chemicals in the air in the plants is as low as feasible, typically less than one part per million. With those concentrations in our plants, we know the concentrations in the air further away from our plants are even lower.

Chemicals which have been shown to cause cancer have done so only through relatively high concentrations over long periods of time. Based on the large amount of scientific data available from studies done over the past two decades, low level exposure to these chemicals does not create a hazard. We believe there is a more than adequate margin of safety for our employees and the public.

The amounts of these chemicals routinely released have been greatly reduced over the years, because it makes good business sense and because of more rigorous governmental regulations. We've spent more than \$3.2 million in the past five years just to protect the air around all our plants.

**Why is it necessary to release these chemicals to the atmosphere? Why don't you just make your plants leak-proof?**

While we employ the best available technology and operating procedures, it simply is not possible to make any chemical plant 100 percent leakproof. There must be relief valves and other equipment to relieve unexpected high pressures within the plant systems, preventing explosions and even larger releases.

**Besides the routine releases to the atmosphere, do you have accidental releases?**

Very infrequently. We have immediately reported these releases to the appropriate state or federal agencies. No accidental release of a chemical from a Vista Chemical plant has ever caused a death or serious injury to a member of the public. In addition, we've studied the causes of these releases and have made engineering or operational changes to prevent their reoccurrence.

**Why haven't you reported these releases to people in the communities surrounding your plants?**

Because the releases have not been of a quantity which would cause injury to the public, and an evacuation has never been required as a result of the releases.

**Could such an accidental release lead to a Bhopal-type accident at one of your plants?**

Because the chemicals we handle are not as toxic as methyl isocyanate, and because of the strict controls and procedures we use in our manufacturing processes, we believe that the possibility of an incident similar to that which happened in Bhopal is very remote. Our plants are well-designed and are maintained, inspected and operated by well-trained, experienced personnel. In the event of a large gas release, a catastrophic loss of life (such as occurred in Bhopal) is highly unlikely because we do not have any materials as toxic as methyl isocyanate. In addition, we have emergency procedures for dealing with gas leaks if one were to occur and we are working with local authorities to improve procedures for protecting the public in the event of an emergency.

**Have you made any changes as a result of Bhopal?**

Due to the enormity of the tragedy at Bhopal, we instituted a formal program to reassess our existing safety systems and emergency procedures. This assessment included a study of materials present in the plant, our handling, processing and storage of those materials, employee training and emergency response procedures. We wanted to be certain that we are operating our plants in a manner that is safe and which will prevent any tragedy from occurring in our plant communities. We've also broadened our studies to include the surrounding communities. Our work at our Lake Charles plants is a good example. We have joined together with other local industry members as well as medical, governmental, police and fire agencies in a committee to improve our communication and understanding. That

committee is examining such topics as availability of emergency medical care, a direct public warning system and evacuation routes which might be needed in the unlikely event of a major catastrophe.

**What sort of warning system or evacuation procedure do you have for the public?**

Current procedures call for alerting and providing assistance to local authorities who have the authority to handle evacuation in the event of a disaster. At our Lake Charles complex, we are connected by special phones with other major plants and governmental agencies in the area, so that we can warn or be warned of emergencies. More direct methods of notifying people in the surround communities are being studied.

**Which chemicals listed by the EPA, or otherwise classified as acutely toxic, does Vista Chemical use or manufacture?**

1. Chlorine is used as a feedstock at our Lake Charles VCM Plant and the Baltimore, Maryland, LAB (linear alkylbenzene) Plant.
2. Ethylene oxide is used as a feedstock at our Lake Charles Chemical Plant
3. Hydrogen fluoride is used as a catalyst at our Lake Charles LAB Plant
4. Sulfur trioxide is used as a feedstock at our Hammond, Indiana, Premium Sulfonation Plant.
5. Hydrogen chloride is used as a feedstock at our Lake Charles Chemical Plant and muriatic acid, its liquid form, is manufactured at our Baltimore, Maryland, LAB (linear alkylbenzene) Plant.

In addition, we use or manufacture much smaller quantities of:

1. Sulfur dioxide
2. Nitric acid
3. Sulfuric acid
4. Isopropanol (Isopropyl alcohol)
5. Methanol (methyl alcohol)

(See reference section  
for more detail)

**Which of the chemicals you use or manufacture are volatile organic compounds?**

1. Ethylene dichloride(EDC) and
2. Vinyl chloride monomer(VCM) are made at our Lake Charles VCM Plant. Vinyl chloride monomer is also used as a feedstock at our Aberdeen, Mississippi, and Oklahoma City, Oklahoma, PVC plants.
3. Benzene is a feedstock at our Baltimore, Maryland, and Lake Charles LAB (linear alkylbenzene) plants, and a byproduct containing benzene is manufactured at our Lake Charles Chemical Plant.
4. Methyl chloride is manufactured at our Lake Charles Chemical Plant.
5. Ethylene oxide is used as a feedstock at our Lake Charles Chemical Plant.
6. Ethylene is manufactured at our Lake Charles Chemical Plant and is used as a feedstock at that plant and at the Lake Charles VCM Plant.
7. Butadiene is manufactured as a byproduct at our Lake Charles Chemical Plant.
8. Propylene is manufactured as a byproduct at our Lake Charles Chemical Plant.
9. Various light alcohols, such as butanol, are manufactured at our Lake Charles Chemical Plant.

In addition, we use much smaller quantities of:

1. Methanol (methyl alcohol)
2. Toluene
3. Xylene
4. Isopropanol (Isopropyl alcohol)

(See reference section  
for more detail)

**What do you do about tiny leaks, ones that are so small that even people working in the plant would not notice?**

We have a system of fixed point monitors in our plants to detect quantities of the of the most hazardous VOCs in the air as small as one part per million, or less. When these chemicals are detected, an operator is notified. Then employees using portable detection equipment can pinpoint the leak and repair it.

## Reference

### Chemicals which we use or make in large quantities

**VOC** = Volatile Organic Compounds

**EPA 402** = Chemicals classified by the EPA as ones which could produce acute adverse health effects if accidentally released

#### Chlorine

It is a major feedstock at our Lake Charles VCM (vinyl chloride monomer) Plant, arriving by pipeline or rail tank car. We use it to make vinyl chloride monomer, the major ingredient in PVC, a plastic with hundreds of uses from vinyl siding and food packaging to plastic pipe and record albums. It is also used as a feedstock at our Baltimore, Maryland, LAB (linear alkylbenzene) Plant to make a major ingredient in industrial and household cleaning products, such as detergents. Its most common usage is in water treatment plants. Chlorine is a heavy, greenish-yellow gas at normal temperatures and has a pungent, irritating odor which is detectable at very low levels. Because it is intensely irritating, you would not remain voluntarily in dangerous concentrations. Exposure to high concentrations can damage tissues in the respiratory system and may be fatal. Chlorine is also present at most of our other plants in cylinder quantities for water treatment purposes. EPA 402

#### Hydrogen fluoride

Hydrogen fluoride is a major feedstock at our Lake Charles LAB (linear alkylbenzene plant). It arrives at the plant by truck. We use it to make the chief active ingredient in such products as laundry detergents and dishwashing liquids. It is a colorless fuming liquid or a colorless gas, which reacts with moisture in the air to form a visible cloud. Its irritating effects can be detected at low concentrations. Exposures to high concentrations can damage tissues in the respiratory system, burn the skin and can be fatal. EPA 402

#### Sulfur trioxide (SO<sub>3</sub>)

It is a major feedstock at our Hammond, Indiana, Premium Sulfonation Plant. We use it to make the active ingredients in such products as laundry detergents and dishwashing liquids. It comes to our plant through a pipeline from the Stauffer Chemical plant adjacent to our property. Sulfur trioxide is a colorless, fuming liquid that reacts with moisture in the air to form a visible sulfuric acid mist. This mist is odorless, but its irritating effects can be detected at low concentrations. Because it is intensely irritating, you would not remain voluntarily in dangerous concentrations. Exposure to high levels can damage tissues in the respiratory system and may be fatal. EPA 402

### **Ethylene Oxide**

It is a feedstock in the ethoxylation unit at the Lake Charles Chemical Plant. We use it to make ingredients which have a multitude of uses, including cleaning and personal care products. It is shipped to our plant by rail tank car. Ethylene oxide is a highly flammable and reactive gas at room temperature, but we handle it under pressure in a liquid form. At high concentrations, it has an ether-like pungent odor and is irritating to the eyes, nose and throat. Exposure to extremely high concentrations may result in lung injury, accumulation of fluid in the lungs and death. It is regulated as a cancer-causing agent. EPA 402, VOC

### **Vinyl chloride monomer**

Vinyl chloride monomer is produced at our Lake Charles VCM Plant, and is a key feedstock at our Aberdeen, Mississippi and Oklahoma City PVC plants. VCM is shipped from Lake Charles and arrives at Aberdeen and Oklahoma City by rail tank car. We use it to make polyvinyl chloride (PVC), a plastic with hundreds of uses from vinyl siding and food packaging to plastic pipe and record albums. Vinyl chloride monomer(VCM) is a colorless gas and a liquid under pressure. Vapors can form flammable mixtures in air. Burning VCM generates hydrogen chloride gas, which in high concentrations, can damage tissues in the respiratory system. High levels of exposure over long periods of time can cause cancer in humans. VOC

### **Benzene**

Benzene is a key feedstock at our Baltimore, Maryland, and Lake Charles LAB (linear alkylbenzene) plants. We use it to make LAB, the active ingredient in many household and industrial detergents and other cleaning products. It arrives at Baltimore by barge and tank truck, and at Lake Charles by rail tank car and tank truck. In addition, we manufacture a relatively small quantity of benzene as a byproduct in our ethylene unit at the Lake Charles Chemical Plant. Benzene is a clear, colorless liquid with a aromatic odor. It can form explosive and flammable mixtures with air. Overexposure can cause dizziness, nausea, vomiting, unconsciousness and death. High levels of exposure over long periods of time is believed to cause cancer in humans. VOC

### **Methyl chloride**

Methyl chloride is made at our Lake Charles Chemical Plant. It is used by our customers to make products such as synthetic rubber, silicones and refrigerants. It is shipped from our plant by rail tank car. It is a colorless liquid or gas with a faint, ether-like odor and sweet taste. It is toxic in high concentrations.

**Ethylene dichloride**

Ethylene dichloride is manufactured at our Lake Charles VCM (vinyl chloride monomer) plant. We then use it to make VCM, the key ingredient in a common plastic, PVC (polyvinyl chloride). We use it all on site and do not routinely ship any outside the plant. After it is made, it is held in tanks until it is needed in the VCM manufacturing process. It is a colorless, oily liquid with a chloroform-like odor. Overexposure can cause severe intoxication, nausea, vomiting and depression and death. The National Institute for Occupational Safety and Health has recommended that it be handled in the workplace as if it were a carcinogen in man. VOC

**Hydrogen chloride (muriatic acid)**

Hydrogen chloride is used at our Lake Charles Chemical Plant to manufacture methyl chloride, an ingredient in such products as synthetic rubber, silicones and refrigerants. Mixed with water, it forms muriatic acid. Muriatic acid is manufactured at our Baltimore, Maryland, LAB (linear alkylbenzene plant). We ship it from the plant in rubber-lined tank cars. Muriatic acid is used in processing metals and gelatin and making pharmaceuticals and chemicals to develop photographs. Hydrogen chloride is a colorless gas, but reacts with moisture in the air to form a visible cloud. It has an irritating, pungent odor. It is detectable at low concentrations. Because it is intensely irritating, you would not remain voluntarily in dangerous concentrations. Overexposure can damage tissues in the respiratory system and may be fatal.

**Ethylene**

Ethylene is manufactured at our Lake Charles Chemical Plant and is used as a feedstock at that plant to make industrial alcohols and at the Lake Charles VCM (vinyl chloride monomer) Plant to make VCM, the major ingredient in a common plastic, PVC (polyvinyl chloride). We transfer it by pipeline and do not routinely ship it out of the Lake Charles complex. It is a colorless flammable gas with a sweet odor at high concentrations. It is a non-toxic gas that will produce narcotic effects leading to unconsciousness at high levels of exposure and may be fatal. VOC

**Alcohols, light**

Light alcohols, including butanol, ethanol and hexanol are manufactured at our Lake Charles Chemical Plant. We ship them by tank cars, tank trucks and in drums. They are used to make various industrial and consumer products including

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plasticizers (chemicals which make plastics flexible). These are colorless flammable liquids with a sweet pungent odor. Exposure to high vapor concentrations may produce narcotic effects and irritation to the eyes, nose and throat. VOC

### **Propylene**

Propylene is manufactured at our Lake Charles Chemical Plant. We ship it by railcar to other chemical manufacturers who use it to make a variety of products, including plastics. It is a colorless flammable gas with a sweet odor at high concentrations. It is a non-toxic gas that will produce narcotic effects leading to unconsciousness at high levels of exposure and may be fatal. VOC

### **Butadiene**

Butadiene is manufactured at our Lake Charles Chemical Plant. We ship it by railcar to other chemical manufacturers who make a variety of products, including synthetic rubber. It is a colorless flammable gas with an aromatic odor. Inhalation of high of high concentrations can cause narcotic effects, unconsciousness and death. Exposure to high concentrations over long periods of time has been shown to cause tumors in laboratory animals. VOC

**Other chemicals we use or make, but  
in relatively small quantities**

**Sulfur dioxide**

Sulfur dioxide is a byproduct produced at our Hammond, Indiana, Premium Sulfonation Plant, where we make the active ingredients in such products as laundry detergents and dishwashing liquids. We send the sulfur dioxide through a pipeline to the Stauffer Chemical plant adjacent to our property. It is a colorless, nonflammable gas with a strong suffocating odor. It dissolves in water to form weak but corrosive sulfurous acid. Overexposure can damage tissues in the respiratory system and may be fatal. EPA 402

**Methanol (methyl alcohol)**

We use methanol as a feedstock at the Lake Charles Chemical Plant to make methyl chloride, an ingredient in synthetic rubber, gasoline octane improvers, silicones and refrigerants. It is brought to our plant by barge. It is a clear colorless flammable liquid with an alcohol odor. Overexposure can result in dizziness, visual impairment, nausea, respiratory failure, unconsciousness and death. EPA 402,

**VOC**

**Nitric acid**

It is used in small quantities in laboratories or as a process additive at several of our plants. It is a fuming colorless or yellow corrosive liquid. Overexposure can cause severe tissue damage and may be fatal. EPA 402

**Sulfuric acid**

It is used in small quantities in laboratories or as a process additive or processing aid at several of our plants. It is a dense, oily, colorless, odorless liquid that is strongly corrosive and nonflammable. Overexposure can cause severe tissue damage and may be fatal. EPA 402

**Toluene  
xylene**

Toluene and xylene are used as feedstocks at our Baltimore LAB (linear alkylbenzene) plant to make ingredients for industrial and household detergents. They are clear colorless flammable liquids with an aromatic odor. Exposure to high concentrations can cause narcotic effects, unconsciousness and death. VOC

**Chloroform**

It is used manufactured in small quantities as a byproduct at our Lake Charles VCM (vinyl chloride monomer) Plant and is used in small quantities as a laboratory solvent in several of our plants. It is a colorless, clear, nonflammable sweet smelling liquid. Overexposure may cause unconsciousness or death. EPA 402

**Isopropanol (Isopropyl alcohol)**

It is used in laboratory quantities at several of our plants. A clear colorless flammable liquid with an alcohol odor. Overexposure can cause mild irritation to the eyes and respiratory system, narcosis and death. EPA 402, VOC