

SEP 26 '86

To: Plant managers, communication contacts

From: Jim Rutledge
Date: September 25, 1986

Subject: If-Needed Statement on Air Emissions

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Communication

This "if-needed" statement has been approved for use in answering media inquiries on air emissions from your plant should the need arise. It contains specific reference information on the major chemicals made or used at Vista's plants, along with approved responses to questions that would likely be encountered during press interviews.

This updated and expanded statement supersedes the material included in the earlier "If-Needed document on Air Emissions," dated Feb. 28, 1986. Please destroy all copies of that document and replace them with the present statement.

Please note that while the actual and permitted emission totals included in this statement are correct as shown, a few of the numbers have "caveats" associated with them--for example, some of the some of the permitted plant emissions are for "new equipment" only. In keeping with the general nature of this document, however, we have chosen not to include this kind of detailed information because it might only cloud the issue for the press.

If you have any questions regarding the attached material or need assistance in responding to a media inquiry, please let me know. Please also continue to keep me advised of all local press calls or contacts.

Thanks for your help.

cc: REL, RTF, JAD, TGG, WLM, DAK, MSR, JCB, DLM

If-Needed Statement

AIR EMISSIONS

All Vista plant locations

Date approved for use: September 18, 1986

Use the following material only in response to specific questions from the media:

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. 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 of which are known cancer-causers, into the atmosphere on a routine basis?

Vista Chemical and the regulating agencies 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 we use, manufacture or which come from our fuel-burning processes are well understood, common chemicals which have been 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 that concentrations in the air further away from our plants are even lower.

Chemicals which have been shown to cause cancer have done so only at 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 or short term 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 chemicals to the atmosphere? Why don't you just make your plants leak-proof?

It's not possible to make a chemical plant 100 percent leak-proof, or to burn fuel without emitting some pollutants. We employ the best available technology and operating procedures to keep emissions at very low levels which are safe for employees and the neighbors of our plants.

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

Very infrequently. We must immediately report these releases in accordance with the appropriate state or federal regulations. 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. We've studied the causes of these releases and have made engineering or operational changes to prevent their recurrence.

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 of the community 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 (MIC), 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 extent 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 phone lines 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 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 Premium Sulfonation Plant.
5. Hydrogen chloride is used as a feedstock at our Lake Charles Chemical Plant and at our Lake Charles VCM (vinyl chloride monomer) Plant. Muriatic acid, its liquid form, is manufactured at our Baltimore LAB Plant; a small amount is also produced in our VCM Plant incinerator unit.

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. VCM is also used as a feedstock at our Aberdeen and Oklahoma City PVC plants.

3. Benzene is a feedstock at our Baltimore and Lake Charles LAB 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 or manufacture much smaller quantities of:

1. Methanol (methyl alcohol)
2. Toluene
3. Xylene
4. Chloroform
5. 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.

What chemicals are produced by your fuel-burning processes?

1. Particulates are emitted at all of our plants, except Hammond.
2. Sulfur oxides (SO_x) is emitted by all of our plants.
3. Nitrogen oxide (NO_x) is emitted by all of our plants, except Hammond.
4. Carbon monoxide is emitted by all of our plants, except Hammond.

Reference

--Tonnes of actual emissions

<u>Chemical</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Nitrogen oxides (NO_x)			
Aberdeen	49.8	-	-
Baltimore	109.4	unregulated	state regs.
LCCP	854	3522.5	state permit
LCLAB	54.6	83.60	fed. permit
LCVCM	204	198.5	state permit
OKC	16.51	22.0	state regs.
TOTAL	1,288.31	3,826.60	-
Hydrocarbons			
Aberdeen	5.7	-	-
Baltimore	14.9	-	-
Benzene	11.3	-	-
Toluene/xylene	22.1	-	-
Chlorinated	1.4	-	-
Others	14.9	-	-
Baltimore, total	49.7	149.7 total hydrocarbons	fed. permit
LCCP			
Benzene	8	-	-
1,3-Butadiene	1	-	-
Ethylene oxide	4	-	-
Propylene	2	-	-
Toluene	7	-	-
Others	934	1132	state permit
LCCP, total	956	1132	-
LCLAB			
Benzene	1.58	-	-
Other	5.43	-	-
LCLAB, total	7.01	8.46 total combined hydrocarbons	fed. permit
LCVCM			
Ethylene dichloride	0.82	1.06	state permit
Chlorinated, other than VCM	0.07	0.09	state permit
Other	12.82	16.65	state permit
LCVCM, total	13.71	17.80	-
Oklahoma City	0.34	-	-
TOTAL	1,026.76	1,307.96	-

VOC = volatile organic compound.

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Air Emissions

Actual emissions, by tonnage 2

A

<u>Chemical</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Sulfur oxides (SO_x)			
Aberdeen	0.2	1752	state regs.
Baltimore	259.2	unregulated	state regs.
Hammond	0.73	12	state regs.
LCCP	51	5673.7	state permit
LCLAB	0.43	16.28	fed. permit
LCVCM	0.438	12.88	state permit
OKC	≤0.07	22	state regs.
TOTAL	312.01	7,488.86	-
Carbon Monoxide			
Aberdeen	5.7		
Baltimore	9.1	91.25	state regs.
LCCP	186	326.8	state permit
LCLAB	0.15	17.3	fed. permit
LCVCM	3	9.39	state permit
OKC	1.87	unregulated	state regs.
TOTAL	205.82	444.74	-
Particulates			
Aberdeen	2.3	157	state regs.
Baltimore	20.3	-	state regs.
LCCP	98	1030.6	state permit
LCLAB	6.7	14.39	fed. permit
LCVCM	62.4	79.65	state permit
OKC	23.3	386.6	state regs.
TOTAL	213.0	1,668.24	-
Vinyl chloride monomer			
Aberdeen	40	97	fed. reg.
OKC	31.5	53.04	fed. reg.
LCVCM	4.23	11.09	state, fed. regs. & state permit
TOTAL	75.73	161.13	-
Hydrogen chloride (HCl or muriatic acid)			
LCCP	0	3.6	state permit
LCVCM	12	12.41	state permit
OKC	0.043	-	
TOTAL	12.043	16.01	-
H₂SO₄ mist			
Hammond	0.01	2.6	state regs.

VOC = volatile organic compound.

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Reference

--Combustion products

Particulates

<u>Plant</u>	<u>Actual emissions based on natural gas (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Aberdeen	2.3	157	state regs.
Baltimore	20.3	-	state regs.
LCCP	98	1030.6	state permit
LCLAB	6.7	14.39	fed. permit
LCVCM	63.42	79.65	state permit
OKC	0.8	38.5	state regs.
TOTAL	191.52	1,320.14	-

Primarily carbon particles from incomplete fuel combustion, but also includes ash, sand or dirt. NOTE: The permitted numbers listed above are for fuel oil. The actual emissions are from natural gas.

Sulfur oxides (SO_x)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Aberdeen	0.2	1752	state regs.
Baltimore	259.2	unregulated	state regs.
Hammond	0.73	12	state regs.
LCCP	51	5673.7	state permit
LCLAB	.43	16.28	fed. permit
LCVCM	0.38	12.88	state permit
OKC	0.07	22	state regs.
TOTAL	311.83	7,488.86	-

Major component is sulfur dioxide. Other components may include sulfur trioxide.

Sulfur dioxide (SO₂) is a colorless, nonflammable gas with a strong suffocating odor. It dissolves in water to form weak but corrosive sulfurous acid. This mist is odorless, but is very irritating 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. Lung damage resulting from severe exposures could be fatal. EPA 402

Sulfur trioxide (SO₃) is a colorless, fuming liquid that reacts with moisture in the air to form a visible sulfuric acid mist. This mist is odorless, but is very irritating at low

VOC = volatile organic compound. EPA 402 = chemical classified by EPA as one which could produce acute adverse health if accidentally released.

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. Lung damage resulting from severe exposures could be fatal.

EPA 402

Nitrogen oxides (NO_x)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Aberdeen	49.8	-	-
Baltimore	109.4	unregulated	state regs.
LCCP	854	3522.5	state permit
LCLAB	54.6	83.60	fed. permit
LCVCM	204	194.7	state permit
OKC	16.51	22.0	state regs.
TOTAL	1,288.31	3,822.80	-

Primarily nitrogen dioxide, a yellow-brown fuming liquid or a reddish-brown gas with a pungent acrid odor at detectable levels. Exposure to high levels can damage tissues in the respiratory system. Lung damage resulting from severe exposures could be fatal.

Carbon monoxide

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Aberdeen	5.7	-	-
Baltimore	9.1	91.25	state regs.
LCCP	186	326.8	state permit
LCLAB	0.15	17.3	fed. permit
LCVCM	8.5	9.39	state permit
OKC	1.87	unregulated	state regs.
TOTAL	211.32	444.74	

Carbon monoxide (CO) is a colorless, odorless gas. The toxic effect of high concentrations is oxygen starvation of the body's cells. CO effects are considered to be reversible as long as brain damage or heart failure has not occurred.

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Reference

--Major use or manufacture

Chlorine

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCVCM	9.6	-	-

Chlorine is a major feedstock at our Lake Charles VCM Plant, arriving by pipeline or rail tank car. We use it to make vinyl chloride monomer, the major ingredient in polyvinyl chloride (PVC), a plastic with hundreds of uses from vinyl siding and food packaging to plastic pipe and record albums. Chlorine is also used as a feedstock at our Baltimore 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 resulting in breathing difficulties. Severe exposures could be fatal. Chlorine is also present at most of our other plants in cylinder quantities for water treatment purposes. EPA 402

Hydrogen fluoride (HF)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCLAB	0	0	-

Hydrogen fluoride is used as a catalyst at our Lake Charles LAB 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 which rapidly vaporizes in the atmosphere to a gas, which reacts with moisture in the air to form a visible cloud. HF is very irritating to the skin, eyes and respiratory tract at low concentrations. Exposure to high concentration in air can burn the skin and damage lung tissue. Lung damage resulting from severe exposures could be fatal. EPA 402

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Sulfur trioxide (SO₃)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Hammond	0	0	-

Sulfur trioxide is a major feedstock at our Hammond 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 is very irritating 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. Lung damage resulting from severe exposures could be fatal. EPA 402

Ethylene Oxide (EO)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	4	-	-

Ethylene oxide 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. 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 and accumulation of fluid in the lungs and death. It is regulated as a cancer-causing agent. This chemical is highly volatile and disperses rapidly in the atmosphere to low concentrations. Therefore, it is unlikely that hazardous concentrations would be encountered outside the plant boundaries. EPA 402, VOC

VHR 5185

VOC = volatile organic compound. EPA 402 = a chemical classified by the EPA as one which could produce acute adverse health effects if accidentally released.

Vinyl chloride monomer (VCM)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Aberdeen	40	97	fed. regs.
OKC	31.5	53.04	fed. regs.
LCVCM	4.23	11.09	state, fed. regs & state permit
TOTAL	75.73	161.13	-

Vinyl chloride monomer is produced at our Lake Charles VCM Plant, and is a key feedstock at our Aberdeen 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 (HCl), a strongly irritating gas which, in high concentrations, can damage tissues in the respiratory system. High levels of exposure to VCM over long periods of time can cause cancer in humans. VCM is highly volatile and disperses rapidly in the atmosphere to low concentrations. Therefore, it is unlikely that hazardous concentrations would be encountered outside the plant boundaries. VOC

Benzene

<u>Plant</u>	<u>Actual emissions tons per year</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Baltimore	11.3	149.7 total VOCs	State regs.
LCCP	8	-	-
LCLAB	1.58	8.46 total hydrocarbons	fed. permit
TOTAL	20.88	-	-

Benzene is a key feedstock at our Baltimore and Lake Charles LAB 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 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. Severe exposure for 15 to 30 minutes may be fatal. High levels of exposure over long periods of time are believed to cause cancer in humans. VOC

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Methyl chloride

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	0	98.9	state permit

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. Severe exposures may result in narcotic effects, such as dizziness, and affect other body systems, such as the kidneys, liver and blood. This chemical is highly volatile and disperses rapidly in the atmosphere to low concentrations. Therefore, it is unlikely that hazardous concentrations would be encountered outside the plant boundaries. VOC

Ethylene dichloride

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCVCM	0.86	1.06	state permit

Ethylene dichloride (EDC) is manufactured at our Lake Charles VCM (vinyl chloride monomer) plant. We use it to make VCM, the key ingredient in a common plastic, PVC (polyvinyl chloride). We use it 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. High exposure can cause intoxication, nausea, vomiting and depression of the central nervous system. Severe exposures may affect other body systems such as the kidneys and liver. 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)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	0	3.6	state permit
LCVCM	12	12.41	state permit
OKC	0.043	—	
TOTAL	12.043	16.01	—

Hydrogen chloride (HCl) is used at our Lake Charles Chemical Plant to manufacture methyl chloride, an ingredient in such products as synthetic rubber, silicones and re-

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frigerants. Mixed with water, it forms muriatic acid. The Lake Charles VCM Plant uses HCl in the production of vinyl chloride monomer (VCM), and also produces medium strength (15-22%) muriatic acid in its incinerator unit. Muriatic acid is manufactured at our Baltimore LAB 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 and is detectable at low concentrations. Because it is intensely irritating, you would not remain voluntarily in dangerous concentrations. High exposure can damage tissues in the respiratory system and cause breathing difficulties. With severe exposures, these effects may be fatal.

Ethylene

<u>Plant</u>	<u>Actual emissions tons per year</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	Not measured specifically- 934 total hydrocarbons	Not permitted specifically- 1,132.1 total hydrocarbons	state permit
LCVCM	Not measured specifically- 12.82 total hydrocarbons 0.07 chlor. hydrocarbons	Not permitted specifically- 16.65 total hydrocarbons 0.09 chlor. hydrocarbons	state permit

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 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 simple asphyxiant, meaning that it displaces oxygen in the air. Severe exposure may result in narcotic effects, such as dizziness, progressing to unconsciousness due to lack of oxygen. This chemical is highly volatile and disperses rapidly in the atmosphere to low concentrations. Therefore, it is unlikely that hazardous concentrations would be encountered outside the plant boundaries. VOC

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Alcohols, light

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	Not measured specifically- 934 total hydrocarbons	Not permitted specifically- 1,132.1 total hydrocarbons	state permit

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 plasticizers (chemicals which make plastics flexible). These are colorless flammable liquids. Exposure to high vapor concentrations may cause irritation to the eyes, nose and throat. Severe exposures will result in narcotic effects, such as dizziness, leading to unconsciousness. VOC

Propylene

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	2	-	-

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 simple asphyxiant, meaning that it displaces oxygen in the air. Severe exposure may result in narcotic effects, such as dizziness, progressing to unconsciousness due to lack of oxygen. This chemical is highly volatile and disperses rapidly in the atmosphere to low concentrations. Therefore, it is unlikely that hazardous concentrations would be encountered outside the plant boundaries. VOC

1,3 Butadiene

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
LCCP	1	-	-

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 concentrations is irritating to the eyes, nose and throat. Severe exposures may result in narcotic effects, such as dizziness, leading to unconsciousness. These

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effects could potentially be fatal. Exposure to high concentrations over long periods of time has been shown to cause tumors in laboratory animals. This chemical is highly volatile and disperses rapidly in the atmosphere to low concentrations. Therefore, it is unlikely that hazardous concentrations would be encountered outside the plant boundaries. VOC

Sulfur dioxide (SO₂)

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Hammond	0.73	12	state permit

Sulfur dioxide (SO₂) is a byproduct produced at our Hammond 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. This mist is odorless, but is very irritating 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. Lung damage resulting from severe exposures could 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, 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, and irritation of the eyes nose and throat. Severe exposures could result in unconsciousness and respiratory failure. 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. Because it is intensely irritating, you would not remain voluntarily in dangerous concentrations. High exposure can damage tissues in the respiratory system and cause breathing difficulties. With severe exposures, these effects may be fatal. EPA 402

VHR 5190

VOC = volatile organic compound. EPA 402 = a chemical classified by the EPA as one which could produce acute adverse health effects if accidentally released.

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. Because it is intensely irritating, you would not remain voluntarily in dangerous concentrations. High exposure can damage tissues in the respiratory system and cause breathing difficulties. With severe exposures, these effects may be fatal. EPA 402

**Toluene
Xylene**

<u>Plant</u>	<u>Actual emissions (tons per year)</u>	<u>Permitted emissions (tons per year)</u>	<u>Basis</u>
Baltimore LCCP	22.1 7(toluene only)	149.7 total VOCs -	state permit -
TOTAL	29.1	-	-

Toluene and xylene are used as feedstocks at our Baltimore LAB 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 irritation of the eyes, nose and throat. Severe exposures may result in unconsciousness and could be fatal. These chemicals are volatile and disperse quickly in the environment to low concentrations. VOC

Chloroform

It is inadvertently manufactured in small quantities as a byproduct at our Lake Charles VCM Plant and is used in small quantities as a laboratory solvent in several of our plants. It is a clear, nonflammable sweet smelling liquid. High exposures to chloroform may cause headache, dizziness and unconsciousness. Severe exposures may result in kidney and liver damage. 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. Exposure to high vapor concentrations may cause irritation to the eyes, nose and throat. Severe exposures will result in narcotic effects, such as dizziness, leading to unconsciousness. EPA 402, VOC

VHR 5191

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