

1994012140

N94-16613

**EMERGENCY PREPAREDNESS AND PLANNING**

*Kenneth Bouvier  
Monsanto  
Luling, Louisiana*

3-2-84

P. 8

It is a pleasure to be able to talk with you today, and it is hoped that some of the ideas presented here may be of interest in your emergency response programs.

I am with the Monsanto facility located 16 miles west of New Orleans. This is a large industrial complex that houses 660 regular employees and over 1,000 contractors. In addition to my work with Monsanto, I have worked with the Emergency Medical Service (EMS) on the streets of New Orleans and with the New Orleans Police and Health Departments for the past 18 years.

Among the most unique things about New Orleans are its history and heritage. The number of very old, authentic buildings still standing is amazing. The oldest apartment buildings in the United States are located in New Orleans. Emergency planning for this area is very important, in part because the Port of New Orleans is now the third largest port in the United States, exporting a lot of the products from Monsanto and the other major chemical companies in the United States. A large percentage of the goods produced in the United States are shipped through the Port of New Orleans for export all over the world.

When millions of people pack the streets, such as during Mardi Gras in New Orleans, having an emergency plan in place is especially critical. It must be an especially good plan, and the people who carry out this plan must be the best. If a chemical emergency should occur involving one of the hotels during Mardi Gras or if a chemical emergency involving the Port of New Orleans should occur, it could be a catastrophe.

Most of the people who visit the beautiful plantation homes in and around New Orleans are elderly; they are retired people on vacation. Buses containing 60 to 90 people each tour these plantation homes. These plantation homes all require emergency plans including provisions for evacuation.

Hazardous materials are everywhere. Most hazardous materials are transported by tank car. If you are familiar with the diamond system of the NFPA 704 that is used on placards and trucks, you would probably be surprised to learn that this hotel would be rated a "3" for health because of the amount of pool chlorine stored here. It would be rated a "4" for fire hazard because of the amount of Sterno<sup>R</sup> stored here for use in warmers, the amount of propane gas that is kept on hand for use at parties around the pool, and the amount of janitorial supply flammables stored in this hotel. In the reactivity state it would be rated a "3" because of the amount of pool chlorine reacting with water.

If NASA wanted to build a facility in your neighborhood, the neighbors would probably complain because of the danger of hazardous chemicals. If Monsanto wanted to build a facility in your neighborhood, the neighbors would be in an uproar -- they would be protesting. But if a large department store wanted to build a facility in your neighborhood, the neighbors would probably not object. However, most department stores house and store large quantities of hazardous materials. The general residents do not worry about the department stores located in their area because they do not believe they could possibly harm them. However, most large department stores offer for sale pesticides, herbicides, chemicals for use in swimming pools, and other hazardous materials. They all should have pre-emergency preparedness plans.

I would like first to tell you something about Monsanto's emergency response plan, and then offer some suggestions that might be of value in designing or modifying your facilities' plans. Large employers such as NASA, the Department of Energy, and Monsanto all have the same kinds of problems. Often the facilities are large, complex, and confusing. It is important to determine what level of medically-trained people are needed at a facility. Monsanto has people on duty around-the clock who are trained all the way up to the paramedic level and, in addition, occupational health nurses come in on a day basis. In the line of emergency response, the Monsanto facility located in New Orleans has 100 fire fighters, EMT's, and emergency responders. All are prepared for any emergency. Other Monsanto plants do not have facilities that are quite as large, and instead they depend on either small fire brigades or local fire departments. In addition to fire-fighting, emergency response includes such things as the testing of fire equipment and sprinkler systems. My responsibility is to make sure that Monsanto has a fire department with sufficient equipment and personnel, and a medical service. We have the best equipment money can buy. A lot of our budget money goes into training and

education. We are proud of the amount of money we spend on emergency response and the fact that, as a result, we never have emergencies.

One very good program that we have at Monsanto includes cardiac pulmonary resuscitation (CPR) certification for every employee in the plant. Even if this never has to be used at the plant, the benefits of knowing how to perform CPR in the employees' homes or anywhere else outside of the plant are significant. Right now, if an employee of Monsanto were to suffer a cardiac arrest with no pulse or respiration, within a very short time another employee would start CPR. A defibrillator would arrive within 5 minutes. These two facts would greatly increase a victim's chances of survival from a heart attack. If one were to have a heart attack on the job, the chances of survival are far greater than if that heart attack occurred at home.

The first emergency medical training (EMT) program Monsanto put in place cost \$88,000. Twenty-five EMT's graduated from that class. As a result of the success of that program our Monsanto facility now has 53 EMT's; on every shift there are 5 or 6 EMT's, there are paramedics, and nurses. Every EMT or paramedic at the facility wears a fanny-pack containing medical supplies and a vest to identify the wearer and what role he/she plays in an emergency.

Having advanced life support monitors in our facilities has greatly benefitted us, especially in the event of a hazardous materials incident. When people are dealing with hazardous chemicals there is always the potential for exposure. When chemicals such as super-heated gases at fires occur, there is the potential for the respiratory airways to swell and the patient may require early intertracheal intubation. Because fire-fighting is a strenuous job, cardiac arrest can occur. The endotracheal paramedic kits contain cardiac drugs that can be utilized immediately. When exposed to chemicals, fluid can build up in the lungs and suction can be performed through the intubation tube to remove the fluid. The paramedics also carry atropine and various narcotics that are available for use when necessary.

At Monsanto, the smallest blister is considered a recordable injury. We encourage the reporting of even the smallest injury because, if a number of minor injuries occur, we can then trace the source of these injuries and attempt to remove the cause. We have a program called CARE (Correcting Actions and Reinforcing Excellence) that consists of cards placed throughout the facility and mail slots. Once a

week, each employee is encouraged to pick up a CARE card and observe employees working. When an unsafe action is observed, it is recorded on this card. There is a reward system involved in the CARE program. If an employee turns in a card once a week, at the end of the year he/she is eligible for a drawing in which a very nice prize is awarded. Nearly everyone participates in the CARE program.

In the area of contractor injuries, Monsanto now requires pre-registration for all contractors who come into our facilities. Certification is required in the form of a license to allow one to work in our facility. No sub-contractor is allowed to work in our facility unless they are pre-registered and have taken a four-hour training course. Very few people are allowed into the plant without this formal training. For example, the man who works on the fire trucks at Monsanto is a contractor. If the fire truck breaks down in the middle of the night, he is pre-approved to come in and repair it. If he had not been pre-approved, the fire truck would stay in need of repair until he was trained. We are very serious in our attempt to reduce contractor injuries.

Among the many specialized areas is the ability to rescue people from confined spaces or by aerial rescue, and a hazardous material response team to handle incidents that might occur both inside the facility and outside on the highways. Times have changed. Years ago we used pickup trucks in our hazmat (hazardous materials) efforts. We would load the materials necessary for the job onto the trucks and go out to wash off hazardous materials that had been spilled on the highways. The materials would be left on the side of the road, or covered with sand, or buried. Today, we are closer to having to dig up the entire highway and replace it. We were doing hazmat when hazmat wasn't cool. Hazmat is a very popular area these days. Although hazmat is prepared to cover incidents involving tank trucks and tank cars, 90 percent of the hazardous materials calls that come into Monsanto involve 55-gallon or smaller drums. Most problems will arise inside your facilities -- someone mishandling or misusing chemicals -- and this is what you are required to be prepared for.

When transporting hazardous materials by truck, it is necessary to perform an analysis of the transportation routes and the types of chemicals that will be shipped over these routes. As an example, Monsanto shipped chemicals in compressed gas cylinders, and found that in one particular area of highway these trucks would overturn frequently. Investigation revealed that these turnovers were due to bad humps on the Interstate coming off of some bridges. We posted large signs warning of the road condition ahead

and for vehicles carrying hazardous materials to reduce their speeds. Even though these signs had been posted, two trucks still turned over. We then went to the carriers and demanded that only drivers be used for this route who had traveled this route before and were familiar with it. Since then we have used only carriers with the best equipment and experienced drivers, drivers who have gone through training and drug screening, and we have not turned over a truck since 1985.

The United States has an emergency plan in the event of war. Within just a few days, the United States could be successful because of this plan. We also have a system in place in the event of nuclear emergencies. Strict guidelines and very technical and well-written emergency plans are in place at nuclear plants. There are also many excellent plans in place to deal with natural disasters such as earthquakes, floods, etc. When these kinds of emergencies occur in foreign countries where there are no emergency plans, there is no way to know where the proper equipment will come from, where food and water will come from, or how to shelter those who are homeless as a result of the emergency. When the earthquake occurred in Armenia in December of 1988 we had to take food with us from the United States. Recently in Miami we saw a very bad hurricane, and the same hurricane hit Louisiana. At my facility in New Orleans our fire department trucks went out 39 times in 16 hours during the hurricane. We encountered everything from roofs blowing off of buildings to windows broken, alarms sounding, chemicals that should be kept from becoming wet, etc. From this emergency the people of Louisiana learned that they must leave very quickly when a hurricane is forecast.

Miamisburg, Ohio; Livingston, Louisiana; and Kingman, Arizona, have all had hazardous materials emergencies. In the Ohio incident, a phosphorous train derailed and 33,000 people were evacuated. Monsanto handled this emergency because the product involved was Monsanto's. Monsanto does not drive the train, but if it goes off the track we get the bad publicity. In this case, a car was burning. The man who was responsible for driving the bulldozer to cover up the spill was not trained in hazardous materials, and the people who were trained in hazmat were not trained to drive a bulldozer. It turned out that it was easier to train the Monsanto hazmat people to drive the machine than to attempt to train the bulldozer driver in how to handle hazardous materials. This community did not have a good emergency plan and, in spite of the warnings, they let their people re-occupy their homes that night. The situation once again became an emergency in the middle of the night, and all of these people had to be evacuated for a

second time. During the Livingston, Louisiana, train derailment, 23 train cars were involved, and the emergency lasted for 17 days. The Louisiana State Police are in charge of all hazmat incidents in Louisiana, and Livingston had an emergency plan in place when this accident occurred. They closed the highway, set up a command post, and evacuated 17,000 people within a radius of five miles. In this accident, the liquid in some of the train cars was brought to a boil and expanded, resulting in explosions. But of the total of 23 cars, only two were totally lost. The residents could not be allowed back into the area to feed their livestock, and after three days the veterinarian asked if there was a plan to feed these animals. There was no plan in place for the feeding of the livestock, so the veterinarian taught our emergency people to feed them. The Kingman, Arizona, incident involved propane leaking from a tanker. There was no emergency plan available and, as a result, men were sent in to cool the tank down and blow out the relief valve. The relief valve was snuffed out and, as a result, the propane leaked out of the relief valve so fast that it froze up. When it froze up it had no vent, and the flames continued to heat the car, boiling the liquid on the inside. Subsequently the vapor built up and the car exploded, killing 13 firemen and injuring 92 bystanders.

There is a big difference between training and education. Fire academies, hazardous materials schools, and emergency planning schools teach that the weakest part of a tank car is the ends; it is designed that when the car over-pressurizes the ends will fail. This leads people to believe that the best approach to the burning tank car is from the sides. In fact, if the car explodes it can take out a radius of two miles.

Evacuation is an important contingency that should be included in every emergency plan. There are times when the best plan of action is to evacuate, secure the area, and let the fire take its course.

What are the risks and benefits of having an emergency plan versus not having such a program? Facilities without such a program are courting disaster. In an emergency situation there is no way one can perform and function as well without a plan. Without the proper training the first thing one might think of to do in an emergency situation is run.

In Bhopal, India, over 22,000 people died and more than 200,000 people were injured because of a chemical emergency in which there was no emergency plan. At Chernobyl, we will never know the entire story. A U.S. delegation of hazardous

materials experts recently toured the area, and they say that the only people at Chernobyl now are adult workers -- there are no children, no livestock, and no living plants. In the United States, the incident at Three-Mile Island was less severe, but was very close to the incidents in Bhopal and Chernobyl. However, we had an opportunity to learn from the incident at Three-Mile Island. Because of this incident there are now strict guidelines, and emergency planning for nuclear plants is very stringent.

All facilities, including manufacturing plants, assembly lines, laboratories, and control rooms must have an emergency plan that is best suited to their needs. The plan must cover the event of small spills as well as large spills, and small fires and large fires. Adequate medical assistance must be available. A risk assessment of each facility has to include all aspects of the facility; for fires, it must consider what the fire threat is, the kinds of fires that are possible, and how big the fire could be. For emergencies requiring medical intervention, the risk assessment must include the probability of injury from the smallest laceration to the most serious injury; burns, broken bones, and inhalation injuries.

A written emergency preparedness plan is necessary. If a written plan is not available an employer might have to rely on the fire department's plan which may not be designed for its specific needs. Three things are needed: (1) a risk analysis of your facility, (2) a vulnerability analysis concerning the possible outcome of potential emergencies, and (3) hazard identification advising the local agencies and ambulance services of your facility's dangers. To design a written plan, all aspects must be considered including minor and major spills, minor and major fires, minor and major medical problems, and minor and major hazmat. All of the potential problems involving your facility should be listed. Meet with your department heads, and meet with your local agencies; police, fire, EMS, hospitals, and your local government. A side benefit of having a good plan in place is the elimination of potential citations and fines.

There will soon be an official regulation released concerning confined space. Nation-wide, nearly 15 emergency responders are killed in events related to confined space. Most of these fatalities are fire fighters. Another problem involves falls. Workers can not only fall from heights, but can be injured as the result of objects falling on them. The proper equipment must be available to rescue and treat individuals involved in these types of incidents. High-angle rescue requires special equipment and expertise. Decontamination might include not only the removal of materials from

clothing, but also the removal of materials from people. Decontamination also requires special skills and training.

At Monsanto we do not see the Occupational Safety and Health Administration (OSHA) on a regular basis, but we do see them after a serious accident or incident has occurred. To be in compliance, the laws must be followed. In the case of hazmat, CFR 1910 120 must be complied with. In the case of a fire brigade, NFPA 600 must be complied with. There are different guidelines and laws to cover all of these, and it is up to the employer to comply with the law.

Accidents do happen in the chemical business. These accidents are in large part caused by human error, and we are continually working to reduce the number and severity of these accident and incidents. While the chemical industry often comes under scrutiny, without chemicals including herbicides and pesticides, life would be very different. Even the chemicals in our foods are there to protect us. Chemicals contribute to an improved standard of living for all of us.