

# CHEMICAL TRANSPORTATION EMERGENCY CENTER

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The Chemical Transportation Emergency Center was established by the Manufacturing Chemists Association as a voluntary project of the chemical manufacturing industry. It is designed to provide advice or assistance to those involved in transportation accidents involving chemicals. Its services are available 24 hours a day via a toll-free inbound wide area telephone service number from any point in the continental United States. The center is a two-step operation. First, on identification of the product involved, immediate action information is read from files prepared in advance. Second, the shipper or other sources of expertise are contacted for additional counsel or on-site assistance. This paper describes the nature of the operation and its capabilities and limitations and summarizes a number of the incidents in which the Chemical Transportation Emergency Center has been involved since it began operating on September 5, 1971. Its relationship to the transportation research community is also discussed.

●ON an icy December morning, a tank truck loaded with sulfuric acid was enroute to Dallas, Texas, on I-30 when, near Greenville, Texas, the driver was forced to take evasive action to avoid a motorcyclist who was skidding on the icy road. The end results were an overturned truck and an injured driver. The load of acid was in unknown condition at the time.

A young mechanic, enroute to work, stopped to assist. The driver appeared to be in shock, but he insisted that someone telephone 800-424-9300 to report the accident. Not really knowing why, the young man called as instructed, reporting the accident and providing the local sheriff's phone number.

His call was received by the duty communicator at the Chemical Transportation Emergency Center (CHEMTREC), who immediately contacted the sheriff for more details, getting the names of the product involved, the carrier, and the shipper.

After giving the sheriff information on the sulfuric acid, the communicator called the safety director in the carrier's home office in Pennsylvania to advise him of the accident and of his injured driver. By coincidence, the carrier had a terminal in Greenville. The safety director then directed the terminal people to provide assistance to the scene. Although less than 6 miles (9.7 km) away, they were not aware of the accident involving one of their trucks. They immediately sent assistance. As a follow-up, CHEMTREC notified the shipper so that he could provide product expertise to the handling of the incident.

Thus, through a single emergency facility, assistance was quickly provided to both the carrier and the emergency services involved in this incident.

CHEMTREC was established by the Manufacturing Chemists Association (MCA). It began operation on September 5, 1971, and provides immediate action response information to the scene of a chemical transportation accident when a phone call is received identifying the product involved. The call goes from the emergency scene to the CHEMTREC office, where a two-step operation goes into effect. First, immediate action information regarding the product is read from files prepared in advance, and, then, the communicator contacts the shipper or other sources of expertise for additional counsel or on-site assistance.

The files contain telephone numbers to permit establishing the proper contact, within the shipper's facilities, to reach someone at any time of the day or night who is knowledgeable about the proper way to handle an emergency situation in which the shipper's product is involved. This is a voluntary program of the MCA member companies aimed at providing timely and accurate information to the emergency services, carrier personnel, the general public, and others who might be involved in transportation accident situations.

The assistance of this center is available to any involved person by calling one phone number from any state within the continental United States. This telephone is manned 24 hours a day, and the number has been and continues to be publicized throughout the country and to emergency and carrier personnel. However, CHEMTREC is not a depository of general information, such as how a shipment should be marked, or a policing agency. Instead, it is a source of help in emergencies, providing immediate guidance on what to do in case of spills or leaks, fire, or exposure. A short description of the operation is presented in the CHEMTREC brochure, which can be made available to those who need it.

When police, fire, or other emergency service personnel come onto the scene of an accident involving chemicals in transportation they are understandably concerned about what is in the containers. In general, the fire services training is geared to flammables, such as gasoline and fuel oils, and usually they are quite well prepared to cope with these. When they face a chemical of an unknown nature, however, there is a possibility of considerable apprehension simply because they do not know what to expect. As a result, the fire services have been particularly active in searching for quickly accessible and easily understood information that would help them evaluate a situation and take proper precautions for the protection of the general public and for their own safety. The chemical industry is well aware of this.

There have been accidents in the past few years that certainly justify this position. Some accidents involving one or more hazardous commodities have resulted in fire and explosion, and have caused widespread destruction and havoc in populated areas.

The National Transportation Safety Board (NTSB) has frequently pointed out the large volume of hazardous commodities that is moved on this country's transportation systems. Similarly, NTSB has noted the information problem in handling transportation emergencies. In its report of the January 1, 1968, Dunreith, Indiana, train wreck, NTSB devoted considerable attention to the difficulty fire officials had in obtaining information on the nature of the materials that were burning and on appropriate fire fighting and control techniques.

CHEMTREC is a major part of MCA's continuing effort to support these emergency services and, as experience is indicating, the carriers. In September 1969, with the encouragement of the U.S. Departments of Transportation and Health, Education, and Welfare, the president of MCA established a study group to consider setting up a system that would be applicable to all producers and shippers of hazardous chemical materials.

It was concluded that a national center and a single telephone number had substantial advantages over other possibilities. It was felt that a single center would be more accessible to carriers and emergency service personnel and would provide shortened response time for action and feedback. The proposal contemplated that the center would be located at MCA headquarters in Washington and that it would have telephone coverage 24 hours a day. After review and recommendation by concerned technical committees, the proposal was adopted in June 1970 by the board of directors of MCA, and funds were authorized for its implementation.

So that the number is made readily available to carriers and emergency services, shipping documents should be marked with the notation: For help in chemical emergencies involving spill, leak, fire, or exposure, call toll-free 800-424-9300 day or night (call 483-7616 in Washington, D.C.). This wide area telephone service (WATS) is identified by area code 800 and provides direct dial service from all the contiguous states.

When an emergency call is received from a policeman, fireman, or others, the CHEMTREC communicator on duty determines what happened and where and when it occurred, the product name, shipment source, name of the company that made shipment,

name of the carrier, car or truck number, the consignee, whether there are injuries, and other information that might be helpful. If there are any unusual conditions, such as weather, or if the accident is in a populated area, this is also determined. Most importantly, the communicator establishes who called, where the person is located, and how the person can be called back.

The communicator will then obtain the appropriate card from the file and provide the caller with response and action information for the product or products involved, by giving basic information such as hazards and what to do in case of spills, leaks, fire, and exposure. This informs the caller of the hazards, if any, and provides sufficient information so that immediate first steps can be taken in controlling the emergency.

Information on products, trade names, and personnel contacts is made available from shippers, trade associations, and other interested groups, such as the Energy Research and Development Administration (ERDA) and the Department of Defense (DOD). This is stored on cards in visible index, tub type of files. After the product is identified, access time to the alphabetized cards is only a few seconds.

The file cards on chemicals have the same general format as Chem-Cards but contain more information. Specific information, such as synonyms, odor, effect with water, nature of product, and hazards, is presented along with details on what to do in case of a spill or leak, fire, or exposure. Experience has indicated little need for physical data other than flash point, ignition temperatures, and vapor density. These are provided where applicable.

Next, the communicator relays the details of the accident to the shipper, who has the expertise needed to deal with the situation. Shipper contact information is also stored on file cards. When notified, the shipper becomes responsible for any future action in regard to the emergency. Based on experience to date, in well over 4,000 incidents, the validity of this two-step approach has been well confirmed.

For certain products, mutual aid programs exist, in which case the communicator's first call may be to someone other than the shipper. Depending on the commodity and manufacturer's preferences, it could, for example, be to the Chlorine Institute, National Agricultural Chemicals Association, or the Bureau of Explosives. When notified, these organizations then establish liaison between the accident scene and the shipper.

In early 1973, the Chlorine Institute initiated its Chlorine Emergency Plan to formalize the service it had been rendering for many years. The nearest producer will respond to the scene of an incident regardless of whose material it is.

The National Agricultural Chemicals Association has some 40 emergency teams throughout the country. On receipt of a call concerning a pesticide, the teams are prepared by their regional directors to evaluate the problem and, if necessary, to send qualified personnel to the accident scene at once.

These groups have proved to be very capable in handling problems of their respective industries. CHEMTREC cooperates with such arrangements and with the organized systems of member companies. Arrangements have been made with ERDA response facilities in case of an incident involving radioactive materials. DOD maintains a response system for items under its control and can readily activate its explosive ordnance disposal teams to look after them. Both ERDA and DOD have been quite responsive to our calls, and CHEMTREC and the Canadian Chemical Producers' Association emergency program work together when needed.

Under appropriate circumstances, various offices of government or civilian agencies are notified. The U.S. Department of Transportation or the National Transportation Safety Board is normally alerted in major accident situations.

To maximize its effectiveness, CHEMTREC should have as broad coverage of chemical products as possible; thus it has long been expanded beyond MCA member companies. As the development of the program continues, information and emergency contacts have been, and continue to be, welcomed from nonmember companies as well. MCA member companies represent over 90 percent of the production capacity of basic industrial chemicals in the United States and Canada. However, it is recognized that the member company shipments represent only part of the hazardous materials shipments made in this country, and it is obviously desirable to be able to provide shipper

backup information whenever possible.

Occasionally CHEMTREC gets calls regarding products of nonmembers, who are not registered in the files. When direct calls are made to these organizations, excellent cooperation is received in getting proper information back to the scene of the incident.

A significant percentage of the file cards are for proprietary items and trade names. And, by far, the greater portion of these are mixtures of two or more compounds. Frequently, different hazards will be brought to the mixture by the various components, and this will result in a multihazard product being shipped. Some shippers of proprietary items prefer not to identify all components of a product but to provide the necessary hazard information. Cross-referencing is necessary in most cases. Single component trade names are also listed by chemical name. Many products have common synonyms: for example, methanol, methyl alcohol, and wood alcohol. These are all in the files. Shipping paper descriptions, as required by DOT are filed. If that is the only information available in an accident situation, at least some response information can be provided.

It is extremely important to note that spelling of chemical names can be critical in getting the proper information. The difference in ethanal and ethanol is appreciable. Names like trimethylene, which is a flammable gas, and trimethylamine, which is a flammable poisonous gas, are easily confused, and care must be taken to ensure proper identification.

One point should be made clear: It is not practical to have a genius, capable of answering all questions, on the telephone when someone calls in. There is a capable individual on duty who can elicit the necessary information from the caller, respond with preestablished advice applicable to the products reported to be involved, and inform shipper personnel so that they bring their expertise to bear on the problem. Retired military personnel were the initial choice for this position. They are mature, dependable, acquainted with emergency situations, and experienced in communications.

The CHEMTREC communicator must limit the advice to the accident scene to the information preestablished in the files. The communicator is not permitted to ad-lib and is well trained in communication and in searching out those who can be of further assistance.

CHEMTREC normally refers people to Poison Control Centers in cases where materials have been ingested and maintains a list of all of these in the country that can be passed on when needed. This has been done in instances such as a person drinking a windshield washer compound and children eating or drinking household cleaners. However, CHEMTREC is being called on to assist the Poison Control Centers in instances where they cannot determine the composition of a product.

As techniques for locating people improve, it is unusual for CHEMTREC to be unable to reach a known shipper. However, if the shipper is not known, it can be difficult to arrange for the second phase follow-up. In these cases, standard references are maintained to provide additional help, and the communicator is authorized to quote from these. Included are the National Fire Protection Association's Fire Protection Guide on Hazardous Materials, The Condensed Chemical Dictionary, the Merck Index, and the MCA's safety publications.

Identification of the product involved is essential. Without it, little help can be provided. The name should be on the shipping papers in the cab of a truck or in the engine or caboose of a train. DOT regulations require the identification of hazardous materials on these papers. If they cannot be found, those involved should try to develop some identification of the shipper or vehicle identification. The tractor or trailer number or license and the carrier's name will give CHEMTREC a chance to locate the product identity and the shipper. Tank car reporting marks are useful, and some cars carry the shipper's name. Carrier associations work with CHEMTREC to assist in this type of search. It may not always be successful, but the percentage of successful completions in these cases is surprisingly high.

Although hazardous materials are involved in about 75 percent of the transportation incidents reported to CHEMTREC, it is necessary to advise those involved when the product presents few, if any, problems. In this way, unnecessary delays in returning to normal operations are avoided. A surprising number of calls have involved titanium

dioxide, which is similar to sand. It is moved in large quantities, as it is the primary pigment now used in white paint. But a truck driver does not recognize this fact.

An interesting case in which fire services were summoned for use on an unknown product occurred in Santa Rosa, California. A boxcar of 54,000 lb (24 500 kg) of bagged material called fural residue was smoldering, and no one would touch it until the hazards were determined. CHEMTREC had difficulty obtaining the shipper's proper name or location. The state was identified as Tennessee, but no town was indicated. Finally, with the help of several telephone operators, the shipper was located in Memphis where a vice-president was contacted, who identified the product as ground corn cobs.

Nonemergency communications with the users can be quite important to CHEMTREC. Much planning went into the operation before it started, but the need is recognized for making continuing improvements to best serve those who call on this service. To this end, CHEMTREC is and will continue to be working with interested individuals and associations to determine those changes within its capabilities that will make it more effective.

In its first 35 months of operations, CHEMTREC received about 18,814 incoming calls of which 7,081 or 38 percent were emergency calls. Of these, CHEMTREC assisted in 3,372 instances: 2,686 or 80 percent for transportation-related emergencies and 686 or 20 percent for non-transportation-related emergencies. Many of the calls were made simply to confirm CHEMTREC's existence.

Assistance has been provided in situations ranging from barge accidents and major train derailments to leaks in small packages. Tank cars and drums have been the containers involved in about two-thirds of the incidents reported. A number of calls have come from ships at sea. Generally, these involved packaged goods that have been distressed when the vessels were involved in storms.

Recently a call came from the London Fire Brigade. A drum of a product originating in New Jersey enroute to Spain was leaking at Heathrow Airport outside London. CHEMTREC advised the brigade that the product described was a harmless dye.

During CHEMTREC planning, it was anticipated that calls from emergency services (fire and police) would predominate. So far, however, carriers (65 percent of calls) are far ahead in making use of the service. Hopefully, this will dispose of many problems before emergency attention is needed.

The distribution, by location of the incident, of calls to CHEMTREC was 43 percent for railroads, 41 percent for highways, 11 percent for terminals or piers, and 5 percent for airlines and ships. For highway incidents, many problems arise or are discovered when the truck reaches the terminal. The distribution, by container type, of calls to CHEMTREC was 37 percent for tank cars, 31 percent for drums, 9 percent for tank trucks, and 23 percent for other containers.

Occasional calls come from highway maintenance personnel, who encounter chemicals that are lost from trucks or that are otherwise spilled. In these cases, it is helpful to have a supervisor evaluate the problem and obtain as much information as possible before calling CHEMTREC. The highway maintenance personnel of the San Francisco Bay area have such a system, and it works well. It keeps drivers from calling with irrelevant problems.

In a recent survey of all types of transportation incidents involving hazardous materials, about a third involved corrosives, and fewer than 20 percent were flammable liquids.

For many years there were a number of companies with efficient emergency response organizations, each with its own telephone. Since the organization of CHEMTREC, there has been a dramatic increase in these. Although each is excellent in itself, there is no need to proliferate a multiplicity of telephone numbers to be used in case of emergencies.

CHEMTREC, by providing a single number throughout the United States, can simplify the problem. It will make use of the numbers of other emergency response organizations, when needed, but the caller only needs one number, that of CHEMTREC.

I understand that the transportation research community, particularly as represented by the Transportation Research Board, concentrates on activities aimed at improving

the design or operation of the transportation system. Although MCA is active in this arena with respect to transportation of hazardous materials, CHEMTREC is primarily aimed at providing a meaningful response to those situations where incidents occur.

Carriers, emergency services, environmental control personnel, highway maintenance people, and others require information and sometimes assistance when chemicals are distressed in transportation; CHEMTREC functions exclusively to this end. It has no reportive or investigative functions. Its planning is not aimed specifically at modifying a part of the transportation system but at how to be responsive to its needs in chemical transportation emergencies. However, its information and experiences are shared with those involved in system planning.

The chemical industry has moved vast quantities of hazardous materials. Relatively, there have been few major incidents; however, have occurred despite concerted attention to accident prevention, which continues with ever-increasing emphasis. There is no question, however, of the need to support emergency services in coping with problems involving chemicals so that the public safety is protected when accidents do occur.

CHEMTREC provides such support by providing immediate and accurate information to help in chemical transportation accidents.