

MIAMISBURG

TRAIN DERAILMENT ACCIDENT



**STATE OF OHIO
OFFICE OF THE ADJUTANT GENERAL
DISASTER SERVICES AGENCY**

STATE OF OHIO
ADJUTANT GENERAL'S DEPARTMENT
2825 WEST GRANVILLE ROAD
WORTHINGTON, OHIO 43085
DISASTER SERVICES AGENCY

TO : All Concerned

FROM: Richard M. Lockhart, Deputy Director
Ohio Disaster Services Agency

DATE: December 16, 1986

RE : Miamisburg Phosphorus Train Derailment

This report was prepared by the Ohio Disaster Services Agency's Technological Hazards Branch.

The report contains information gathered and compiled from personal interviews of those on scene. A list of all those interviewed is included.

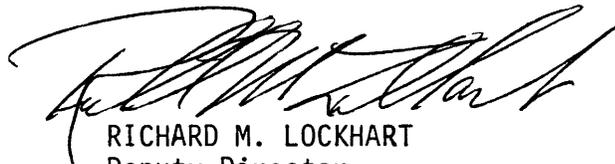
Information requested encompasses the areas of Hazard Analysis, Assignments of Responsibility, State and Local Coordination, Resources, Notification, Communications, Public Information, Assessment, Protection Actions, Medical Support, Post Accident Operations, Training, Plans, and Legal Recommendations.

This report depicts the problems that were encountered, the successful actions taken, and recommendations for future methods of operation.

The Ohio Disaster Services Agency is not a response agency for this type of accident, so the information depicted in this report is as expressed by those interviewed.

This report can be used as a planning reference document by any and all attempting to write hazardous materials plans or annexes to plans.

FOR THE DIRECTOR:


RICHARD M. LOCKHART
Deputy Director

RML/cc

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MIAMISBURG TRAIN DERAILMENT INCIDENT

People Interviewed:

1. Ed Kovar - Miami Valley Disaster Services Agency
2. Gary Caparotta - Miami Valley Disaster Services Agency
3. Dennis Kissinger - Miamisburg City Manager
4. Robert Meers - Mayor of Miamisburg
5. Dave Freeman - WHIO-TV Channel 7
6. Tony Riggs - Regional Transit Authority
7. Don Martin - Combined Health Department District
8. Jean Zimmer - Director, Montgomery County Animal Shelter
9. Stephanie Smith Grey - Chief Deputy Dog Warden
10. Greg O'Ryan - Red Cross
11. Ron Parker - Miamisburg Public Information Officer
12. Bob Menker - Miamisburg Fire Chief (On-scene Commander)
13. Ron Moorefield - Ham Radio Club District Coordinator
14. Randy Staley - Washington Township Fire Department Captain
15. Richard Emmons - Lt., Miamisburg Police Department - Evacuation
16. John Lowther - Lt., Miamisburg Police Department - Evacuation
17. Billy Ring - Captain, Miamisburg Fire Department
18. Cpt. Brough,
Lt. Sennet
Lt. Stockhauser - Fire Inspectors
19. Glen Moyer - Miamisburg Sewer Department
20. Claude Berry - Miamisburg Water-Sewer Dept.; Public Works;
Streets
21. Friendly Nursing Home - Nursing Supervisor
22. Verna (Administrator)
and Chris - Christal Manor Nursing Home
23. Supervisor & RTA - Hartland Nursing Home
24. Secretary of City
Engineer - Engineer (Ray Bell) now deceased
(Asst. City Manager was on scene with Engineer)
25. John Weithofer - Asst. City Manager
26. Corporal Miller - Montgomery County Sheriff's Office
27. Inspector Cox - Montgomery County Sheriff's Office
28. Dr. Augustine - West Carrollton EMS & Miami Valley Hospital
29. Dick Reynolds - Miamisburg City Schools
30. Due to confidentiality law; had to interview the Red Cross, Dr. Augustine, and the Ohio Department of Health instead of the evacuees/shelterees.

State Agencies:

31. Mike Dalton - Ohio Environmental Protection Agency
32. Frank Neil - Ohio Department of Agriculture
33. Cpt. Bueno - Ohio State Patrol - Columbus
34. Lt. Lanning - Ohio State Patrol - Piqua Post
35. Don Ryan - State Fire Marshal - HAZMAT Chief

State Agencies (Cont'd)

- 36. Earl Francis - Ohio Department of Transportation
- 37. Henry Mitchell - Public Utilities Commission of Ohio
- 38. Sharon Sigler - Ohio Attorney General's Office
- 39. John Eaton - Ohio Disaster Services Agency
- 40. Frank Holtzhauer - Ohio Department of Health
- 41. Kevin O'Dell - Ohio Department of Natural Resources
- 42. Gary Holland and Henry Guzman were the Governor's Representatives on scene.
- 43. The Ohio National Guard was on Standby.

Federal Agencies:

- 44. Tom Lasseigne - National Transportation Safety Board
- 45. Regional Air Flight Control - Federal Aviation Administration
- 46. Jack McDonald - Federal Railroad Administration
- 47. Phil Olekszyk - Federal Railroad Administration
- 48. Bomb Squad on scene - U.S. Army
- 49. Chief Neil Mangun - Wright Patterson Air Force Base
- 50. Jack Barnett - U. S. Environmental Protection Agency
- 51. Cliff Mosley - Center for Disease Control

Not Interviewed But on Scene:

- 1. O.H. Materials - Cleanup Contractors & HAZMAT Specialists
- 2. B.G. Danus - Operation Bulldozer Contractors
- 3. CHEMTREC
- 4. Pert - Phosphorus Emergency Response Team
- 5. Albright - Wilson - HAZMAT Team
- 6. Monsanto
- 7. Clermont County DSA
- 8. Warren County DSA
- 9. Darke County DSA

To supplement all interviews, all pertinent comments from newspaper articles, the League of Cities Report, notes from the OHSET Hearings, and the Miami Valley Disaster Services After Action Report were incorporated into this report.

NARRATIVE

On July 8, 1986, the largest evacuation in history due to a hazardous materials train derailment was initiated when 15 cars of a 44 car freight train derailed. The train was heading south toward Cincinnati when it left the tracks at 4:29 PM.

The immediate problem ensued when a tank car containing 12 thousand gallons of white phosphorus derailed and ruptured. White phosphorus is pyroforic and burns in air at temperatures of 850 Fahrenheit.

The first report of the situation came from a traffic air scout who happened to see the plume.

The Miamisburg Fire Department was called to respond and Chief Menker became the on-scene fire commander throughout the incident. The overall person in charge of the situation was the City Manager Dennis Kissinger.

After arriving on scene, Chief Menker immediately called for the evacuation of parts of Miamisburg, West Carrollton and Moraine.

Due to the swiftness of the onset of the incident, the initial evacuation was called for without time to develop a plan of attack. The evacuation was based on information obtained from chemical handbooks. The information listed phosphorus reactions as eye and skin irritations and short-term respiratory problems. The City Manager concurred with Chief Menker's decision.

The initial evacuation consisted of the police, fire, EMS, and city workers and officials going door-to-door announcing the situation and telling residence to leave the area. Along with going door-to-door, vehicle sirens, flashing lights, and loud speakers were used.

Eventually the area was divided up into small map sectors to which police cruisers and crews were assigned.

Mutual aid calls went out to all possible response forces and all necessary and required notification calls were made to State and Federal agencies.

To guard against lawsuits and to give the City Manager clear authority, the Mayor and City Council declared a State of Emergency through the Governor's Office by 6:00 PM.

As this was occurring, at the incident site a problem had ensued. The railroad manifest describing what was on the train was kept from the on-scene fire chief. Not knowing what they were fighting, made it difficult to decide a course of action. On top of this the Chessie Officials tried to take control of the scene and remove the cars before an investigation had been performed. The authority stayed in city hands. The course of action chosen was to use water and mist to eliminate oxygen from the area to stop the burning. Water was pumped at 5,000 gallons per minute.

NARRATIVE (Cont'd

To add to the problem, there were 5 other cars in the area of the phosphorus car that were burning. One was a tanker containing tallow (animal fat), one was a box car loaded with rolls of newsprint, and 3 cars were open sided automobile carriers.

The phosphorus car was resting on a bridge tressel which spand Bear Creek which added to the problem - not only was the plume a factor to worry about but also the possible contamination of Bear Creek which emptied into the Great Miami River.

Water would not put the phosphorus fire out due to several holes in the tanker. As the water was removed, more phosphorus leaked through the holes to ignite in the air.

It was incorrectly referred to by the media that people were being exposed to phosphorus. Due to the burning, the plume was of phosphoric acid.

Not until midnight of the first night was it reported to the Fire Chief that a tanker of sulphur was also burning next to the sulphur car. This, if it had mixed with the phosphorus (luckily it did not) would have resulted in a potentially deadly gas when mixed with water.

On Wednesday, July 9th (the second day), the situation appeared to be under control, at least to the residents and they started calling in to see if they could return home and many just started returning on their own - even though the city still advised residents to stay away. The city felt the situation was still unstable and never gave an all clear to return.

Wednesday afternoon and early evening, the City Manager, Fire Chief, and other officials were in meeting to decide what to do with the tanker. It was feared the tankers structural integrity was failing due to the extreme heat of the fire for 21 hours - also because the tanker was built before 1966 and not up to current production standards. It was also feared that the tanker could shift and spill its contents into the creek as the bank of the creek was eroding away under the 21 hours of 5,000 gallons of water per minute over the last 21 hours.

The option chosen were:

- a. Let it smolder; but it could burn for 4 - 6 weeks.
- b. Off-load the tanker
- c. Burn the tanker; accelerate the burn rate. This presented a problem in they would have to right the tanker to a flat position.
- d. Bury the tanker in sand; but, they would eventually have to dig it up.
- e. Neutralize it - how?

NARRATIVE (Cont'd)

Options Chosen (Cont'd)

- f. Move the car.
- g. Apply a newly designed foam. The foam was in Minnesota and the equipment for application in Texas.
- h. Collapse the car into the creek; but what of the pollution?
- i. The Army wanted to dynamite the tanker.

The decision was reached to use the new foam, but it would take 12 hours to get it. The car would be moved on Thursday morning.

However, at 6:04 PM Wednesday night, the bridge abutment gave way, the car shifted and ruptured. Immediately following this the phosphorus re-ignited and sent the second huge cloud through the air.

The second, and largest evacuation was immediately ordered - the entire city of Miamisburg and surrounding area jurisdictions.

The second evacuation went much better than the first for several reasons:

- (1) Many people were still away due to the first evacuation,
- (2) There was a plan for the second evacuation - the area had been sectioned off, and
- (3) When the second release went up, the majority of all residents saw it on the 6:00 PM news which gave them reason to leave of their own accord.

Ed Kovar activated the Emergency Broadcast System (EBS) for the second time to announce evacuation information, shelters, and instructions. He also started calling in resources.

For the second evacuation, the Regional Transit Authority, school buses, and many ambulances were used to evacuate residents, without their own transportation, and nursing homes.

This second and largest evacuation was over in a couple hours with no major mishaps. The police patrolled the evacuated areas all night for looting with no problems of any magnitude.

They let the fire burn through the night with five water cannons applying water to the fire and plume.

The main shelters used were Miamisburg High School, West Carrollton High School, and the Dayton Convention Center.

NARRATIVE (Cont'd)

The University of Dayton Arena was opened but due to lack of air-conditioning was considered unusable as a shelter and closed. Some spontaneous shelters were opened throughout the surrounding jurisdictions.

On Thursday the wind shifted away from populated areas and based on this, the city designated three zones that were in effect until Saturday. The zones were the Caution Zone, the Irritant Zone, and the Restricted Zone. Protective actions were assigned to each zone. The caution zone - citizens had full access to the area but were advised to stay tuned to TV and radio for information. The irritant zone - citizens were advised to stay out but were allowed to return if they so chose. The restricted zone - only authorized persons were allowed in the area. This kept about 300 people from their homes and most of the downtown businesses closed. Many returned to the other zones.

The next plan of action was to remove the manway covers and washout covers from the top and sides of the tank car to improve the flow of oxygen and to speed up the burn of phosphorus. They could also install hoses and fans to further accelerate the burn. At this point, the U.S. Environmental Protection Agency (USEPA) disagreed with the decision and threatened to take control of the situation - the City Manager never relinquished his command.

Thursday afternoon, a critical decision had to be made; the sides of the tank car were pulsating due to the intense heat. The decision, even with U.S. EPA disagreeing, was made to remove the covers and accelerate the burn. The operation was carried out successfully. The city's authority was never questioned again.

A formal Emergency Operations Center (EOC) was finally established in the Miamisburg Civic Center - the DSA director had tried to establish an EOC earlier but due to confusion and other thoughts, it was not set up. Until this time, the EOC was make-shift at the command site or somewhere in the civic center. Hard phones were established in the formal EOC.

Friday, the tanker still burned and severe thunderstorms threatened.

There were no further evacuations Thursday or Friday, especially due to windy conditions; people were told to stay indoors, close windows and outside air sources.

In the midst of the thunderstorms, the emergency workers dug a pit lined with wet sand and diverted Bear Creek. The decision was made to upright (level) the tank car and move it 35 feet into the pit. This would allow faster burning of the phosphorus, and to see how much was left in the car. The pit was in case the car broke - they could bury it in the pit.

NARRATIVE (Cont'd)

The car was leveled successfully - the rain from the thunderstorms helped shield the workers but also caused flooding and a contamination and containment problem.

On Saturday, one to four inches of "mud" was in the bottom of the tanker. A hose was inserted into the tank car and the remaining phosphorus mud was buried under two inches of water - this extinguished the fire. The car was then pulled to a bed of wet sand with a dike around it and there it sat to cool for several days. The all clear was withheld until the car was completely stabilized.

The all clear and the okay to return home was given to all at 1:15 PM with the exception of an incident operation zone around the accident site.

The air monitoring results of particulates in the air confirmed the decision to evacuate was the best. Safety readings of particulates was seven and on Wednesday the readings showed 52.

People were warned to stay away from the Bear Creek and Great Miami River until cleaned up as gelatinous globs of phosphorus were found in the water. Also there had been a fish kill.

The initial findings say the derailment was caused by the lateral spreading apart of the track due to the heat and no spacer joints in the track sections. When the track spread apart, the weight of the train layed the track sideways and the cars derailed.

The tanker cooled and the top cut off and the remaining product sludge was off-loaded and hauled away.

The railroad hired a cleanup contractor and with the supervision of the Ohio EPA, the clean-up process of the site and surrounding area was started. Clean-up lasted four months. The Fire Chief retained control of the scene through the end of the clean-up.

The City Manager ordered pulmonary testing for all city and emergency workers and recommended similar tests for others in the communities.

The Ohio Department of Health (ODH) conducted several surveys along with the Communicable Disease Center for long term effects and the results of all surveys are hoped to be completed by the end of June 1987.

The initial pages of this report were to give readers a somewhat generalized narrative or synopsis of the Miamisburg hazardous material train incident.

NARRATIVE (Cont'd)

The following pages will go into much more detail, however, the following pages are not meant to point a finger or accuse anyone of mistakes or errors. The writer feels, from everything he has seen and heard, that the incident was handled very professionally.

The ensuing pages will merely attempt to point out many of the actions that were performed and whether they were successful or not so successful. The report will also include recommendations by those who responded to the incident. These recommendations will include better ways of handling certain aspects of the response and also any recommendations that may be beneficial to those embarking on future planning for hazardous materials or other hazards their communities may face.

These statements will be broken into the 15 functional areas of a plan as listed in the State of Ohio Hazardous Materials Planning Guide.

ANALYSIS OF HAZARDOUS MATERIALS

The effects of hazardous material accidents and how they are handled depend upon: severity, location, quantity of product being transported, types of packaging and containers used, the amount of product released, weather conditions, response times of emergency forces, and potentials of further spread.

One way a community can plan for a more effective response to such an accident as the Miamisburg train derailment is to conduct an analysis of the hazards materials within its boundaries.

The Miami Valley Disaster Services Agency compiled a hazardous analysis for their area prior to the train accident. The analysis was done by interfacing with the local fire departments, police departments, and local businesses and industries. The analysis supplied information on: the types of hazardous materials that are located and carried through the county, what modes of transport are used, where the vulnerable areas are in relation to these locations, and what the possibilities and probabilities of accidents are.

Knowing the above information tells area responders: what they can possibly expect as far as hazards are concerned; it gives the area an incentive to plan and receive training in response to specific product accidents; it shows the areas that need extra protection; and the types and amounts of resources that will be needed if such an accident were to occur.

The MVDSA hazard analysis was done in conjunction with a similar hazard analysis that was done by the area Red Cross. The two agencies worked together to compile their document to reduce the efforts of duplication.

The knowledge of the hazard analysis was felt to be helpful, but this document can't possibly warn the county or other jurisdictions of every hazard that may be present. The analysis told that there were several modes of transport capable of carrying hazardous materials into and out of the area. Railroads were one mode - the mode that created the Miamisburg incident.

There are, according to the Federal Railroad Administration, over 160,000 railroad cars carrying hazardous materials per year in the State of Ohio; 900,000 tank cars in the country last year. Railroads carry 70% (bulk quantity) of all hazardous material traffic. Only 10% of all hazardous material accidents are on the railroads.

Ohio has the second highest number of hazardous material accidents (between the years of 1976 - 1984). In 1979 there were 105 accidents and in 1985 there were 54 accidents. It is estimated by response officials that there will be 30 major train derailments per year in Ohio and two of them will be catastrophic.

ANALYSIS OF HAZARDOUS MATERIALS (Cont'd)

Even with a current hazardous analysis, the area can't possibly know what traverses its boundaries at all times i.e. phosphorus, but by knowing the possibilities, it can be planned for in plans, training of responders on dealing with the hazardous materials they may be faced with, and by pre-planning for needed resources - equipment and personnel. Resources can be purchased or if not possible, agreements with contractors, businesses or industries, or surrounding response forces can be contracted.

Although the Miamisburg responders and all responding mutual aid responders had not been trained on phosphorus spills, knowing of the potential problem did help and more training in the future will further increase their efficiency.

By being prepared for such possible disasters, the local jurisdiction, along with the responding local forces, was fully equipped with necessary equipment to fight the problem. The only equipment not locally available were specialty items such as off-loading equipment, special foam, and equipment, etc. Through the MVDSA director and staff these special needs were successfully procured.

One question that arises in relation to this topic of analysis is, "should local jurisdictions have prior notification and knowledge of all hazardous materials shipments through their areas?" The feelings of the City Manager, DSA director and most emergency response forces are basically the same. They feel it would be helpful to have a general idea of what products are carried in, out, and through their area and generally by what modes. This would allow them to better prepare for those specific types of hazards, but to be notified of every item and every shipment would be a disaster in itself. Who will receive and log these notifications? What will they do with them? Who will manage this monumental task? Analysis of the situation by general prior notification will be sufficient.

The topics associated with analysis i.e., training, assessment, site analysis, legal considerations, and so forth will be addressed in the following singular sections.

Also, the issue of hazard analysis according to the 403 acutely toxic substances will be addressed under the legal section, as there is a controversy on which substances should be planned for the most according to a hazard analysis - in other words, whose list of worst substances do you plan for? Environmental Protection Agency's list of 403, National Institute of Occupational Safety and Health's list, Occupational Safety and Health Administration's list, or anybody else's. If one is to go by a federal list, why not a state list? Refer to the legal section that follows.

ASSIGNMENT OF RESPONSIBILITIES

The section on assignment of responsibilities automatically lends itself to the subject of prior planning and training. Training will be discussed later under a separate section. To assign one responsibilities, one must plan and decide who would best be suited to the job.

In regards to the Miamisburg train derailment, the assignment of responsibilities was carried out according to the plans that were in existence at the time; assigning duties to the local forces that would normally be responsible for or dealing with such a situation on a daily basis.

It was a unanimous belief of all interviewees that plans are a necessity. Plans do not need to be bulky but do need to tell who does what, when and where. Plans must tell who is in charge and who has what authority to do things. Plans must delegate responsibilities to specific agencies.

There were several plans in effect at the time of the derailment. The MVDSA had an emergency operations plan for Montgomery and Greene Counties. The MVDSA is working on a hazardous materials plan and will soon start on the overall revision of their emergency operations plan. The regional hazmat team has a plan in effect and has mutual aid attack plans with all 26 fire departments that are members of the team. The City of Miamisburg has a disaster plan. West Carrolton has a disaster plan. All police, fire, and sheriffs forces have Standard Operating Procedures. There was a new (updated) hospital mass casualty incident plan in force and the Montgomery County Animal Shelter has a plan. There are mutual aid agreements between all police departments and fire departments. An agreement or plan called Operation Bulldozer is in effect for needed resources.

Plans should be kept to the basics: authority, what forces respond, who does what, who's in charge and when, what are everyone's roles. Keep plans to the necessary basics, but do not include Standard Operating Procedures (SOPs) in plans. SOP's should be kept separate from the plan, written by those individuals who will handle a specific task, and the SOP should be kept in the agency that uses it.

The responsibilities of all responders that may have a response function need to be listed - state, federal, local, private, or volunteer agencies.

This causes a problem before one even starts - what are the roles of the federal agencies - these need to be spelled out so someone knows what to assign them to.

ASSIGNMENT OF RESPONSIBILITIES (Cont'd)

Before one can assign responsibilities to an agency, one must know what that agency is capable of doing - also its legal capabilities. Meetings between agencies need to be set up for this purpose. Once these capabilities are known, a planning session or several need to be held to iron out turf problems, authority problems, legal problems, and once ironed out the responsibilities can be assigned, agreed to, and written down.

This isn't the end. It is not enough to just write it down, these duties must be explained to all and members trained on their roles. Once taught all their respective expectations, drills and exercises must be held on an on-going basis to ensure all know their jobs should the need for response arise.

The above applies to mutual aid forces also. In Miamisburg, the mutual aid forces were under the control of their own supervisors but the forces were under overall control of the Miamisburg officials. Thus the mutual aid forces need to know their responsibilities and be trained as well as the local plan holders.

In Miamisburg the assignments of responsibility were as follows. The City Manager is, as described under the Miamisburg Charter, in charge administratively. The Mayor and City Council are the responsible legislative body. Thus during the Miamisburg incident, the City Manager was in overall authority for the entire incident. If it had been felt the City Manager was not operating in a proper manner, the Mayor and City Council could have removed him, this did not happen. All decisions during the incident had to have the clearance of the City Manager. This followed their in-house plan. The City Manager always tried to keep the Mayor and City Council fully informed if time did not preclude this action.

According to the Ohio Revised Code, the ranking on-scene Fire Chief is in charge of the scene. The incident occurred in Miamisburg and Fire Chief Menker took control of the scene and kept it through the end of the incident. Chief Menker was charged with making many decisions at the scene and command post, but all final decisions were made by the City Manager, Dennis Kissinger.

The top chain of command was actually: The Mayor, City Manager, Fire Chief. According to existing plans, these men all had a line of succession. Do to the swiftness of onset of the incident, some assignments of duty were handed out as time went on i.e. the public information office was assigned the job at the time by the City Manager.

Plans must also list lines of authority and chain of command - during times of crisis, one certain individual may not be available or be able to be reached immediately. In Miamisburg, there were distinct lines of succession. These lines of succession are a must especially when it comes time to take breaks - you must have backups for all positions and more than one level deep.

ASSIGNMENT OF RESPONSIBILITIES (Cont'd)

When these lines of succession are put into effect, it must be announced who the new person in charge is, and conversely announce when the command returns to the original person. This happened often at the command post (CP) for example; whenever the chief left the CP to go to a meeting, his authority was delegated to his second.

One problem in the area listed above was the City Manager felt it is necessary to enlist assistance from other management areas - his staff was spread much to thin - must have plenty of backup personnel.

One large problem of responsibilities is the assignment of authority. This was a large problem at Miamisburg. The locals took charge and total responsibility for the incident but had a problem with the U. S. EPA trying to take over. The U. S. EPA person, Dr. Wu, tried to remove the City Manager as authority. Forty-five hours into the incident, according to the City Manager, the U. S. EPA decided they could do it better and threatened to remove him. Dr. Wu said he could get a court order and Mr. Kissinger said he would have to. The U.S. EPA said he was in violation of the "National Chemical Act" - never heard of by the local officials. In the end, the City Manager kept control and STRONGLY SUGGESTS locals keep control of the situation.

Question: If U.S. EPA takes control, control of what? Control of everything? Partial? The scene only? Employees? If going to relinquish control of a situation, it was felt one needs to have these areas answered. Also, if U.S. EPA takes over, do they pay for everything or just some? Do they take charge and are they accepting full responsibility for every area of the community or just parts of it? These areas need to be answered in clear cut language in the law. As of now, to read the law - its a guess.

The law needs to address the problems of responsibility and authority in the areas of multi-jurisdictional decisions. The City Manager could order evacuations for his City but what are the legal responsibilities of contiguous jurisdictions? Could the City Manager speak for other areas? PROBLEM - The evacuation was called for Miamisburg and surrounding areas, i.e. Moraine. The evacuation order was given for Moraine but the Mayor of Moraine counter - manned the order. This was a large problem; Miamisburg evacuated but Moraine did not (or at least their Mayor said not to). If problems arise, who stands accused? What was the City Managers responsibility to the Moraine residents? Who had the authority - City Manager of Miamisburg or Mayor of Moraine? The law and plans must address these questions prior to a disaster.

ASSIGNMENT OF RESPONSIBILITIES (Cont'd)

These assignments of responsibility must be ironed out in plans prior to an incident. One problem of the current plans in Miamisburg was not all necessary agencies were involved in the planning process. For example, one very large problem during the incident was what to do with the animals during the evacuation. If the animal shelter agency had been included in the planning process, along with the Red Cross, these problems could have been answered and the responsibility of what to do with the animals could have been properly assigned. The same as for pulling the Red Cross into the planning process, for the responsibility of choosing appropriate shelters. There was a problem with using the University of Dayton Arena as a shelter; had the Red Cross been given the responsibility of choice prior to the incident - a problem could have been avoided.

You must bring everyone who has a role into the planning process.

This topic of a model ordinance really belongs in the legal section, but since it deals with authority and responsibilities, it will be addressed here.

A suggestion was made by the City Manager that all plans should have emergency model ordinances within them. These model ordinances will have to be legally passed and adopted in the jurisdiction. These ordinances will answer all questions concerning authority and responsibility during times of an incident. These emergency ordinances would be enacted by the jurisdictions in times of emergency to assign and give authorities to make declarations, use emergency powers, announce who's in charge, and so forth. State laws talk of natural disasters and do not pull rules of locals into operation.

Emergency model ordinances should be set up so when declarations of states of emergency are made by the Mayor they kick in emergency powers for the duration of the incident that will be endorsed by council. The ordinance will be set up to go into effect within a specified time of the incidents impact. The ordinance would be prior approved - as many times during a crisis it is difficult to assemble a quorum of policy makers. Once the specified time had passed, the ordinance would go into effect to answer questions such as: Evacuation; the laws are very vague as to who can order an evacuation. The key word is order an evacuation. Who can do it? When? Power to enforce it? With this ordinance in effect, when at a later date someone questions the authority or where the authority came from to order the evacuation, one can refer to the emergency ordinance. Thus one clear place for authority, not many vague listings in the codes.

An emergency ordinance could answer questions such as does the Mayor need council approval to declare a state of emergency? Who has the authority and when they can exercise it.

ASSIGNMENT OF RESPONSIBILITIES (Cont'd)

Emergency ordinances can answer questions of who can take over control and when and what they are responsible for, i.e., the U.S. EPA's attempted take over. The jurisdiction could draw up the emergency ordinance - once legally approved - to answer any questions of authority or responsibility that may be unclear.

Once the responsibilities are assigned to the agencies that can best handle them i.e., those responsible for that operation on a daily basis; DO NOT CHANGE HATS when the emergency strikes. This causes confusion.

Once given authority to handle certain operations, take the initiative to do the job and don't be intimidated by others. For example, some people had to be removed from the command post and EOC, and at times pressure came from sectors (business) to allow them to return and open for business.

Finally, the responsibilities must be listed for private sectors such as the railroad (carrier), the shipper, manufacturer, contractors, etc.

The shipper is responsible for proper labeling, marking, and packaging of the product. All the responsibilities should be listed in plans so locals know who to contact.

The carrier (CSX in Miamisburg) has responsibilities by law to package, placard, and ensure safe shipment. That should be listed in a plan. The carrier is responsible for all cleanup and costs associated with an accident. These responsibilities need be set in a plan so as to know how to receive compensation and legal actions.

Any further references to responsibilities of agencies, problems encountered in this area, and legal recommendations to correct this area will be discussed in the appropriate following sections.

On the topic of planning, it was felt by most in Miamisburg that our efforts for this report and follow-up guidance was a very worthwhile project. Also it was felt that planning for hazardous material accidents is important, not planning for nuclear war. Hazardous Materials are here and now and need to be planned for.

CONTIGUOUS STATE AND LOCAL COORDINATION

Coordinating operations between local agencies, surrounding local jurisdictions and their forces, private forces, contractors, state agencies and their representatives, and federal agencies and their representatives is an extremely large and difficult task.

In Miamisburg this task included coordinating efforts of not only the Miamisburg forces but forces from many of the 53 surrounding police jurisdictions, 30 different fire departments, over 116 medic units from 6 counties, the responding county forces, private industry and contractors, 11 state agencies and 7 federal agencies.

According to those interviewed, the coordination between local forces, mutual aid forces - city and county, the private and volunteer forces, and state forces was very good.

The problems of coordination and cooperation came from the federal agencies that were at the scene. The U.S. EPA attempted to take control of the incident - to be discussed later. The National Transportation Safety Board set up its own command post and held its own press briefings without coordinating with the locals in charge. The Army wanted to blow-up the tank car. The Air Force was angry they weren't called earlier. The Federal Railroad Administration also held its own press briefings.

On the local level, there were mutual aid agreements among police, fire, sheriff, and others. Coordination among locals was very good. There were no major flare-ups; a few minor frustrations which are to be expected when that many people work in close proximity for that many days.

To get through a situation of this magnitude or any other where there are many responders, total coordination is a must; jurisdictional or agency problems or discrepancies decrease operational efficiency.

One problem that needs to be addressed in planning is that of lines of authority. When as many agencies from all levels of government respond as they did at Miamisburg, who do you work with? It's necessary to coordinate with everyone but unless lines of authority and legal responsibilities of responding agencies are spelled out, problems are sure to arise. The worst problem was the previously discussed U.S. EPA take-over attempt. U.S. EPA felt according to law they should be in charge; the locals felt it occurred in their area and they were in charge. Several other agencies were irritated because their agency was not in charge or used as the experts. The lines of authority and a full listing of legal agency responsibilities must be declared in the laws and expressed in area plans.

As mentioned previously, the coordination was good between emergency response forces. The problems stemmed from some of the upper level management people in state and federal agencies. It was mentioned in a local interview that the indians got along great but the chiefs fought for recognition.

CONTIGUOUS STATE AND LOCAL COORDINATION (Cont'd)

Coordination between levels of government needs to be identified - explicitly. Coordination between jurisdictions needs to be spelled out also. The Moraine problem was one such incident - where Miamisburg said evacuate and Moraines' Mayor said do not evacuate.

Control must be centered in one or two people as it was in Miamisburg. The City Manager was in overall charge of the incident and the Miamisburg Fire Chief was in charge of the incident scene. The City Manager and Fire Chief were in charge but there were also sector commanders responsible for specific areas such as water control, medical, evacuation, etc. All decisions were discussed with sector commanders and coordinated with other essential personnel for input. This is a must - one or two people can't make all decisions by themselves.

There is a regional hazmat response team in the area. There is contiguous local coordination among members in that the team is made up of representatives of 26 fire departments.

All local agencies that were called in responded to the call, there were no problems of agencies or employees refusing to respond. Sometimes there were delays in personnel responding due to traffic jams.

There was assistance from surrounding local officials also. Other City Managers and Mayors offered any and all assistance. West Carrolton and Moraine loaned members of its clerical and city staffs to assist wherever needed. The City Manager of West Carrolton acted as a liaison officer.

West Carrolton served as the medic command post and there were over 100 ambulances at the fire station #2.

There is contiguous training between response agencies in Miamisburg to allow multiple response agencies to know how each other react and respond to incidents. This is very helpful and can eliminate a lack of response understandings between contiguous forces.

The local DSA office keeps very close contact with the County Sheriff whose department is the 24 hour warning point for the county.

There is coordination between the hospitals in Miamisburg and contiguous areas. Prior to the incident they had just updated their mass casualty incident plan. It worked very well and helped coordinate the hospitals and EMS field forces. Refer to the medical section.

There is and was contiguous coordination between the area DSA's. All five western county DSA's work together and share a great deal of information with each other - in times of disaster or normal times.

CONTIGUOUS STATE AND LOCAL COORDINATION (Cont'd)

There was, aside from a few problems that will be discussed in the public information section, very good coordination and cooperation with the news media - TV, radio, and newspaper. Without the cooperation of the press in warning and keeping the public informed, the incident would probably not have been as much a success as it was.

One outcome will be a closer coordination with the press, the inclusion of the press in the planning aspect of the county and city plans, and training with the media is planned in the future.

Initially, there was a tremendous amount of confusion and there was a great lack of coordination of incoming agencies and forces - for a couple of hours. Once the initial confusion died down and the incident command system - sectors - was put into effect, coordination was much better.

At first, there were so many forces responding to the command post that coordination was difficult. There was so much traffic in the area of the command post it was lucky there were no injuries. It was decided to set up staging areas for all the responding units to assemble in. Several staging areas were set up; one close by the command post, one at the civic center, and one or more at other locations in the county.

Staging areas for contiguous forces are a must.

These staging areas reduced confusion of forces and it allowed units to be briefed and given assignments very easily.

Coordination was fragmented as there was no EOC established. Most people felt an EOC would have allowed much tighter coordination of activities but some felt an EOC was not necessary. The MVDSA Director attempted to get an EOC established but was not successful. The County EOC is in Englewood, 25 miles away - no one would travel to Englewood for an EOC. All people were on site or at the civic center. It was felt that with an EOC, coordination of efforts, communications, coordinating resources, and evacuation operations would have been easier. On the other hand, it was difficult to get all necessary people to report to an EOC as many were out working at field sites. In the beginning, the EOC was at the command post as the decision and the decision - making process was carried out at this location. When things calmed down after the first and second tank eruptions, a full EOC was established in the Miamisburg Civic Center. All necessary officials were brought in and map boards and bulletin boards were made available. The decision - making process was conducted from this location for the remainder of the incident.

CONTIGUOUS STATE AND LOCAL COORDINATION (Cont'd)

One problem that enhanced any possible problems of coordination of agencies was the communications problems. The telephone lines were completely jammed and the existing radio frequencies were totally overloaded. These communication problems and the ways they were rectified will be covered in the communications section. The overall message on this subject is that you must plan for this loss of communications and lack of coordination between forces.

Some further problems encountered in the area of coordination were as follows:

The very initial problem of the railroad not coordinating with the response forces, fire chief, and City Manager. The railroad people would not release the trains manifest. This held up initial actions by responders as they didn't know what they were dealing with. The railroad finally admitted the product was phosphorus but they did not tell the response forces any more information. They actually lied by saying a sulphur car was pulled away from the scene - it was not and had the phosphorus sulphur and water united, a more toxic gas would have resulted - causing a much more hazardous situation. The railroad also in the beginning tried to take charge of the scene and pull the derailed tank cars away before an investigation could be performed. A fight ensued with the City Manager who in the end retained control of the situation and the railroad official was removed from the area.

This above problem needs to be addressed legally. The railroad must relinquish all manifests and weighbills to responding forces, and this must be legally enforced. According to the fire chief, present laws say manifests are to be released to responders but according to railroad manuals, the railroad employees are not to release any information. Along with lines of manifest, it is felt that manifests should, by law, be revamped. List the hazardous materials more easily recognized, do away with all extraneous information, put into laymen terms, and possibly add response techniques to the specific product.

It was felt the federal agencies could take lessons in coordination from local and state agencies. The state agencies were appreciated. They offered assistance and gave what the locals requested. The feds tried to force their aid onto the locals.

CONTIGUOUS STATE AND LOCAL COORDINATION (Cont'd)

Had a problem, as related by Miamisburg officials, with the State Fire Marshals office. The State Fire Marshal was irritated, according to local officials, that they were not contacted immediately and put in charge. Derogatory statements were made about the locals by the State Fire Marshal's office and consequently resignations were requested of members of the Marshal's Office. According to locals, there is a District Fire Marshal's Office in the area and they knew of the accident. Also, locals had a regional hazmat team and the CHEMTREC phosphorus emergency response team, and several other teams and experts on scene and the locals didn't feel they needed the State Fire Marshal. As the officials said if you have 10 experts on scene to handle the problem, it's stupid to bring in 10 more experts.

There was a problem with coordination with the ODSA. The local DSA's and officials requested the ODSA communications man and never received it. Also it was felt by a member of the Ohio Department of Agriculture (ODA) that ODSA was wrong in not activating the State EOC. By not activating the State EOC, the EOC representative was by passed and the member that was irritated didn't know if he should respond or not. It appears to the writer that if the State EOC is not activated then it reverts to the Ohio Department of Health's decision as to whether they respond - only they know if they are supposed to react or not, what does their legal calling say?

Local officials felt the Ohio Department of Health had a problem in being able to say they were the health information center. There was also a problem of communication between ODH on-site and getting health information to the field forces in a timely manner. There was a failure on the locals part to hold enough meetings on health effects to the field forces and then getting this information to these forces.

Overall state coordination and cooperation were felt to be great. The Governor assigned liaison people from his office to coordinate state resources. Senator's Metzenbaum and Glenn offered full cooperation also.

There was also coordination between state forces, the OEPA and Ohio State Patrol tracked the plume together on the ground and from the air.

There were no problems encountered between local or mutual aid response forces. All these agencies were under the control of the Miamisburg. Commanders in charge of sectors. In light of this, the following will be an accounting of the state and federal agencies that were at the incident and what they did and problems as they saw it.

STATE AGENCIES

The Ohio Environmental Protection Agency (OEPA) was notified of the incident by the news helicopter that spotted the plume. They responded to the scene and were there within 45 minutes. They were only 10 minutes away but they had to stop and get extra equipment. The OEPA is required under law to respond to spills to protect the health and safety of citizens. They respond to water pollution problems and back up locals on air vapor evaluations to inform them of the public impact.

On scene the OEPA helped the fire department assess what was involved, what was being carried, and participated in the close in approach to the tank cars. OEPA worked on the containment of the tallow in Bear Creek and tested for the impact of phosphorus or sulphur in the stream. They also took a boat up under the tressel to assess the scene.

The next day they started to remove the tallow and tracked the plume to set up a warning and evacuation system. The OEPA worked closely with the MVDSA Director who coordinated all supplies for them - felt there was great cooperation.

They performed evaluations of the Great Miami River and ran tests on downstream effects, and helped in setting up the response plans to relocate Bear Creek to keep product from entering Great Miami River.

A problem: the OEPA didn't get the diversion project of Bear Creek until Thursday and the ditch wasn't constructed until Friday. They had a problem with the fire chief working with them - chief always had to consult with others and he excluded OEPA from the planning and decisions. OEPA was not allowed in the conferences and couldn't get there input into the meetings. EPA wanted to build a diversion Wednesday but it took till Thursday to get the okay. EPA was not notified when the fire department built a dam - the dam didn't work as a diversion; it broke and washed product into the river. EPA was told the priority for the next day was to build the diversion but 2 hours before the diversion done, they were pulled away. The rains came and diversion was not done; there was a wash out and a lot of product entered Miami River - this caused a three day delay. EPA said fire chief was not looking at the entire picture. All advised not to move the car before the diversion was done as did the contractor; the fire chief forced it and caused a large problem. The fire chief did tell EPA he was going to do it and due to bad communications between the agencies the EPA couldn't get information to chief fast enough. The chief thought EPA concurred when they had not. EPA said he can't fault the chief as he didn't know the chiefs reasonings. (The car was starting to buckle due to the heat). EPA felt the chief did a good job overall.

STATE AGENCIES (Cont'd)

Large problem was when the car shifted due to the ground erosion from all the water and the second eruption occurred. Dr. Wu of the U.S. EPA tried to take control. OEPA says U.S. EPA was very inexperienced and should not have been there. Monsanto had a scene specific model but U.S. EPA wanted to build their own - not as good - the U.S. EPA tested incorrectly - they used the wrong media to collect samples. U.S. EPA was egotistical. They told the OEPA they wanted to blow the car and then told the chief the OEPA wanted to blow the car. Dr. Wu tried to take over saying he could do better, but he never said what he would do. He wouldn't cooperate with anyone or allow his people to assist - he felt he was the only expert. Dr. Wu would disappear from the area for hours at a time and would never give out his phone number.

U.S. EPA did not have legal authority to take over, according to the OEPA. To do this there is a process to follow and he had not. Usually to take over it is at a hazardous waste facility. Law needs to be clarified.

The OEPA representative felt the EPA has a problem in giving back up. They have no common frequency. He feels the state response was poor. Most state agencies don't have radios; OEPA used mobile radio from Clermont County DSA. OEPA said most of the state agencies just stood around and did nothing.

This above needs to be clarified. Clarify what the state agencies roles are and who is to respond to sites. Eliminate excess agencies from area that do nothing -this reduces confusion (same goes for feds). OEPA feels the only state agencies needed were OEPA, ODSA, OSP.

The OEPA was in charge of cleanup - supervised. The railroad hired a cleanup contractor - O.H. Materials. EPA said the Air Pollution Control Company ordered a lot of useless work - lot of wasted money. Supposedly, according to the EPA interviews, due to local complaints extra air monitoring was done, cleanup was shut down at night, and air pollution devices were installed. This all produced not results. OEPA in Columbus, Ohio didn't call for this - the higher ups did. The OEPA wanted to set up system of instantaneous air monitoring read out but the higher ups said, "no, use the 24 hour readings." This caused problem with local officials - they felt 24 hours took too long and no good - OEPA agrees.

OEPA feels it is necessary to get spelled out - Who's in charge? OEPA supervised cleanup; they told railroad what they wanted, the railroad hired contractors to do it.

OEPA recommends those writing plans should work with the EPA.

The Department of Agriculture(ODA). They received no formal notification, their field people just normally respond if they hear of a problem. He called and offered services of the Department of Agriculture lab and personnel to Miamisburg. DOA angry because State EOC not activated.

STATE AGENCIES (Cont'd)

The Department of Agriculture (Cont'd)

Received a Governors call a 1:00 AM to get people to the site, he told the caller he'd send someone to Miamisburg by 8:30 AM and they okay'd it. There was very little DOA could do on scene. DOA said Dr. Wu alienated everyone for a 50 mile radius. The local health department called DOA and said thanks but they had too many on scene already. The DOA labs can not do anything on scene - it takes a week to get results.

DOA answered phone calls in Columbus and in the Miamisburg Civic Center on questions about animals, plants, food, and water. DOA had no legal requirement to respond. They just answered questions - DOA wasn't ordered into the area. They had no hands on jobs. They gave a report to the OHSET committee.

The Ohio State Patrol (OSP) heard of the incident through the media and then a follow-up call came from the local patrol post.

Their responsibilities were to try and predict where the plume was going - through use of their helicopter. The Ohio State Patrol did not have a legal requirement to respond - anything within a municipality has to be a request from the locals.

The OSP also assisted the OEPA in getting readings and air monitor samples. They also supplied communication for OEPA.

They also controlled the ingress and egress on I-75 (traffic control).

Problems seen: Communications and trying to ascertain what was happening. There was a lack of cohesiveness between agencies that had responded and the ones that were ready to respond. There was a lack of communications between agencies to use resources, i.e. Fire Marshal not called (discussed previously).

The State Fire Marshal (SFM) was not called at first. Twenty-four hours later the OSP called and said Governor wanted them there. A crew responded from Columbus and were at the command post till 4:00 AM on second day. They were not utilized so they returned to Columbus. SFM had very little to do in Miamisburg. They did answer phone information.

The SFM is legally required to respond if threat of fire or explosion but it is policy not to go unless locals request them.

Recommendation: Enact an expert state response team. Representatives from ODSA, EPA, SFM, etc. to be on scene for input and authority to take over if situation gets out of hand. This team of experts would eliminate the mass confusion of many responders. A law would have to be on the books to enact this team to control over - reaction, wasting of money, rebuilding, hauling, etc. The team makes sure what is done is really necessary. No problems were witnessed.

STATE AGENCIES (Cont'd)

The Public Utilities Commission (PUCO) heard on TV. The PUCO representative called the railroad inspector and he told him to respond.

The field person calls the Columbus PUCO and they dispatch to scene. Required to respond for several reasons: \$4900 damage or more to train or stock, injury or death to a rail employee.

PUCO had several responders; each person being responsible for a specific area. There were several days of waiting till could get to site. One does track inspections (measurements), one checking rail cars to see if they caused problem.

The PUCO interviewee works for PUCO but he does his inspections for the Federal Railroad Administration. PUCO works with the railroad to discover cause. Was one person from PUCO and one from Federal Railroad Administration (FRA) on scene.

Felt all went well. The PUCO representative does his inspection, fills out his report of findings and conclusions and recommendations, sends it to Columbus (Transportation Department), and they send it to the Director of Transportation. PUCO can recommend corrections and changes and follow-up on them.

Recommends pre-planning and pre-training of all response agencies so all know their places and roles.

The Department of Transportation(ODOT). Their representative called by the OSP post 57 at 7:35 PM. He went to site and offered all agency assistance. It was a county road that was involved so DOT had no jurisdiction. The following day, officials were worried about I-75, Route 4 and 425. ODOT gave illuminated arrow boards to the locals to block the roads. Unless ODOT is called in, they have no jurisdiction. They assisted in directing traffic and posted detours and ramp closures on I-75.

Problems - had trouble getting boards and people to send to road blocks - congested traffic.

They also had people from the Montgomery County Garage to assist where needed.

Also sent a report to the Division of Rail Transportation Authority.

STATE AGENCIES (Cont'd)

The Ohio State Patrol (OSP) (Piqua Post). Called by the Dayton Post - Dayton Post heard over scanner. They had no legal obligation to do anything at the scene.

They were requested to regulate traffic going into the city by way of I-75 and Route 725 from Wednesday to the end.

They used their helicopter for EPA to follow plume and used cruisers for EPA to follow plume for air and ground tests.

They were escorts for Governor and Directors.
Saw no problems.

The Attorney General's Office(AGO) heard on the TV. No one responded to the site. The office had or has a member on the OHSET committee. They held press conferences.

This office basically consulted on legal issues of the situation - each situation is different as to the laws involved.

Recommendation - need a more centralized control body - state level. Need to end turf battles - should be legally codified.

The Ohio National Guard - were on standby.

The Ohio Disaster Services Agency(ODSA) - notified by OEPA and OSP. Activated the State EOC with a skeleton force and a Governor's representative until a state emergency was declared. The agency helped coordinate information to the Governor's Office. Sent two representatives to the site to offer assistance - had no actual response capability.

Problems - too much confusion.
- Need to identify agencies somehow - hats, arm bands, etc.
- Identify incoming agencies to know who's who on site.

The Ohio Department of Health(ODH) - received initial call from the OEPA. They responded the next day with a physician (later on the physician returned and a staff member took his place). ODH had a total of four at the incident.

Not legally required to respond directly but the ODH director has responsibility to help the health of the population through some broadly written laws.

They assessed the chemicals involved and gave an assessment of the health impacts.

STATE AGENCIES (Cont'd)

The Ohio Department of Health (Cont'd)

The doctor gave advice on general health issues and treatment information. ODH also coordinated with hospitals and physicians to find out about the chemical, and to coordinate medical specialists in the area for referrals of the population.

They manned phones for citizen requests.

ODH representative interfaced with CDC and local/city health departments and represented the state on health issues.

They conducted several follow-up surveys: one of those who were seen at the hospitals for long term health effects, and one survey of evacuees of Miamisburg and Centerville on symptoms, how they were notified, did they evacuate or not, and their impressions of evacuation and shelter.

Problem was not phosphorus but actually exposed to phosphoric acid.

Had to answer questions on how do you deal with first responders that touched the chemical? How deal with first responders in area of phosphoric acid cloud? How deal with populace? How deal with DSA and the populace in the evacuation process?

There was no ready access to computerized data base information on this product.

The locals turned the task of their department over to the Ohio Department of Health.

ODH did no sampling or testing - left to EPA.

Recommends: Need more people to go door-to-door in an initial evacuation notice. These door-to-door responders must be calm so as not to panic the public. Responders need to give more information to the public then, "get out of the area."

Alternate routes need to be given to shelters as well as routes in general - people were not told how to get there - some exposed more than if they'd stayed home.

Need better notification of hospitals on what's happening. Get hospitals into planning.

Test hospital plans. On paper they are great but in use - were problems such as communications, patient loads, etc.

STATE AGENCIES (Cont'd)

The Ohio Department of Health (Cont'd)

Need to address issue of pets. People refuse to leave home.

People concerned about looting - ease their fears - (this was done in announcements to shelterees).

Coordinate with Red Cross for appropriate shelters and appropriate numbers of shelters.

The Ohio Department of Natural Resources (ODNR) was notified by OEPA and also saw on TV. There was only one person at scene for first couple days until a fish kill discovered, then called in five people.

They were legally responsible to respond due to the fish kill. They tally results of kill, tally the bill, report results, and bill the culprits (the Columbus office issues the bills).

ODNR worked with the OEPA and took pictures, waste samples, fish in distress tests, and temperature tests. Originally under \$25 fish kill, but then saw a large one on the Great Miami River. They had to find who was at fault, notify them of fault, tally the fish kill, figure the stream length of kill, do a biological study, and do reports on long-term reproductions. OEPA told them how to contain the area. ODNR talked to experts on phosphorus and fish kills and then sent in water samples to confirm their beliefs.

High waters due to the rains caused a flood and carried the product and increased the fish kill to the Ohio River.

The media bugged ODNR a lot while they were busy taking water samples. It was a problem at first but then the OSP took ODNR up in the helicopter to follow the fish kill.

Phosphorus did not affect birds or animals; did affect one turtle.

Planning - locals can call ODNR state game protector direct for assistance. There is one in each county. They work for the Wildlife Division of ODNR. No problems seen.

FEDERAL AGENCIES

The National Transportation Safety Board (NTSB) was notified of the incident by the National Response Center (the National Response Center was notified by the Chessie Railroad). The notifications made were to CHEMTREC, EPA, U.S. Coast Guard, Ohio EPA, Miamisburg Police Department, PUCO. The train dispatcher made nine calls between 4:30 and 7:30 PM. The first call was to Chessie Police and then to Chessie Fire and Safety, freight claims and rail movement.

A total of five people responded for the NTSB as an investigation response crew. Each member is a specialist in a specific area, i.e. mechanical, tracks, inspections, operations, and vehicle performance. All these areas are determined, meetings are held, information is gathered and reports are written and put into public documents, and finally statements and depositions are filed.

NTSB was legally required to respond due to the amount of damage that was involved (3/4 million dollars). There are certain reasons per mode that require the response of the NTSB. The Board of Statutes 97.74 of the Independent Safety Act of 1974 requires them to look at loss of life. NTSB has the duty to investigate hazmat accidents that present risk due to product release.

The size of the evacuation pulled NTSB into the site also.

Whether the "go teams" respond depends upon each individual situation.

NTSB is actually a fact gathering causal factors gathering agency. They draw and make recommendations to causal agencies on what needs to be corrected or changed for National Safety.

NTSB has no regulatory clout.

They are still compiling depositions and there are no formal issues drawn to date.

NTSB felt it was overall a good response, there are always problems but were they bad ones - they don't want to say until all the information is in.

Federal Aviation Administration (FAA) - assisted in restricting the air space. There were too many helicopters flying through the area causing the plume to spread and also hindering communications do the "helio-thump" from the rotors.

This restriction irritated the press; they felt the officials were denying them press coverage.

FEDERAL AGENCIES (Cont'd)

U.S. Army had a bomb squad at scene to assist in blowing up the tank car - this idea was never chosen.

The Wright Patterson Air Force Base (WPAFB) was called in on Wednesday by the command post. WPAFB was on scene from Wednesday through Saturday.

The Air Force did not have a legal responsibility to respond; they have mutual aid with the regional hazmat team. Only time Air Force is legally required to respond is if government craft or installation is involved.

The WPAFB Fire Department was called in to cover the Miamisburg Fire Station. They worked with the people on the crash truck and water turret at the scene and the pumpers while locals worked on the tank. Saturday the WPAFB Fire Chief was the "center sector" commander and he reported to the command post. WPAFB set up decontamination stations on Saturday morning.

They had no problems at all.

For planning purposes, locals can request Air Force assistance anytime by going through the Base Commander at the Base Command Post or Fire Department. Before writing the Air Force into local or state plans or a resource, must check through the Air Force Legal Officer.

The U.S. Environmental Protection Agency (USEPA) was not officially notified - their representatives saw it on TV. Ohio EPA called soon afterwards.

There were four to six members of USEPA on scene. USEPA does have a legal responsibility to respond whenever there is immediate threat to health, life, and the environment.

The USEPA offered technical assistance and advice to the scene responders and also on clean-up operations. They also offered technical advice on protective clothing. USEPA conducted monitoring around the site and supplied any needed equipment.

The USEPA on-scene coordinator had the authority to spend up to \$1,000,000 - this was offered.

They assisted in monitoring clean-up - but Ohio EPA took the lead in this area.

Problems: They were not there to take over. There were initial turf battles for take over of operations but these were resolved quickly. USEPA felt the locals had a good local plan and knew of their resources but the locals had no idea of USEPA's role and their resources. USEPA said it had a problem getting to the City Manager or on-scene coordinator to let know what was available to him; had communications problem with the City Manager.

FEDERAL AGENCIES (Cont'd)

The Federal Railroad Administration (FRA) was notified by 5:45 PM. Chessie Railroad notified the Cincinnati or Cleveland Office. By law the railroad is to call the National Response Center and they call the office of Safety and this office coordinates the dispatch of regional response.

There were approximately six members on scene, however, they were not legally required to respond. It is just policy that states they respond to investigate accidents. Their main objective is to determine the cause. They reconstruct the accident afterwards to see if any federal laws were violated or whether there are any other ramifications. The responding specialists become inspectors to search for causes.

If violations are found, the FRA goes against the guilty party. If no violations, the FRA issues a report and also accumulates other reports to see if trends on that mode of transportation are showing any long-term implications.

The fines for violations are governed by the CFR 49. Usually there are monetary fines unless found to be a willful violation and then can be possible civil penalties.

To do their job, they have to wait until emergency is over and therefore, have no interactions. The area was cleared before they started work - No Problems.

The Center for Disease Control (CDC) was called by the USEPA in Cincinnati. Two members responded. Response was due to a request, not a legal requirement. They are, according to the National Contingency Plan and Cercla, the lead health agency and legally respond if requested by the initial responders.

They were asked by USEPA to provide estimates of the situation - the toxicity of the phosphorus cloud going off-site. They were asked questions on worker safety and protective clothing.

The major questions asked of CDC was, "At what level of exposure should people be evacuated?" They based their decisions on known health effects of which there was very little. They basically used any and all literature on the subject.

The Fire Chief asked CDC to put recommendations in writing so he could legally set up his zones of evacuation.

All information was given to the fire chief; CDC had no dealings with the media.

FEDERAL AGENCIES (Cont'd)

The Center for Disease Control (Cont'd)

CDC is conducting two follow studies:

- (1) Long term health effects; and
- (2) Surveys of the evacuees.

CDC was a consultant to Ohio Department of Health on the surveys. CDC developed the questionnaires, reviewed literature, and gave information of release and its effects for the ODH reports.

EMERGENCY EQUIPMENT, FACILITIES, AND RESOURCES

The local officials felt that they had an ample supply of resources available to them locally. Resources include equipment, personnel, and facilities. The offerings of assistance by all neighboring jurisdictions, industries, state and federal governments was thoroughly appreciated. The locals felt they were in good shape and only wanted to know what was available from the state and federal governments. The state was good in this, they offered assistance but the locals chose what they wanted. The federal government offered assistance but at times tried to force its aid upon the locals which was not appreciated, i.e. the USEPA attempted to take over.

One thing that must be planned for is the handling of almost excessive assistance offered. At times there was too much assistance and aid available. Someone is needed to just handle all the incoming offers of assistance and to coordinate resources so as not to get overloaded. Also to eliminate problems of confusion of incoming aid, staging areas must be set up for incoming aid whether for vehicles, personnel, or equipment.

Also considered to be a good idea, is to have a person to record all offers of assistance; the person needs to record the callers name, address, phone number, aid that was offered, location of aid, and how soon can get it. This will eliminate over-loading the areas with aid but will provide a list of equipment if needed later on.

The MVDSA Director was in charge of coordinating and acquiring needed resources. All interviewees feel he did an excellent job. Whenever someone or some agency needed some extra equipment, the director procured it. At the directors fingertips was a listing of phone numbers of all agencies that could assist - a resource list. Also at his use were all the agencies that are associated with Plan Bulldozer. These agencies and contractors are under agreement to supply needed resources such as vehicles, heavy equipment, etc.

Miamisburg had the following and it is suggested that all counties have or get contact persons on board for resources. For example, the radios and phones were jammed and additional phones needed to be installed quickly. The Amateur Radio Club gave DSA a phone number for an Ohio Bell representative who cut through the hassles and got extra cables strung and additional phones and spares hooked up in less than 8 hours.

Miamisburg has resource lists through the DSA office and most response forces have resource lists for locations of needed equipment.

Resource lists are necessary to come up with special equipment such as generators for electricity. Generators were acquired for the command post but with several going at once, they proved to be too noisy. By using their contact persons, the electric company made power line drops into the command post; then utilities could just be plugged in at the site.

EMERGENCY EQUIPMENT, FACILITIES, AND RESOURCES (Cont'd)

Agencies such as police departments, fire departments, engineer departments, public works, etc. all have resource lists in Miamisburg.

It is necessary to have compatible resource lists. For example, fire departments know which stations use what types of hoses and fittings and also which departments have needed fittings or couplings that responding forces may not have or spares if run out. Also needed are lists of compatible radio frequencies so as many responders can talk to each other as possible.

One resource that most feel is very important from the outset of an incident is an EOC. This facility enables coordination of operations and enhances the decision making process. Communications can be coordinated from this locality along with the coordination of equipment, resources, and response forces and operations. The problem of not setting up an EOC was fully discussed in the Contiguous Coordination Section. Basically DSA tried to set one up but due to confusion and other thinking, an EOC was not set up until Thursday. At this time all decisions and activities were coordinated from this location.

Miamisburg was blessed with emergency equipment, facilities and resources to include the personnel of the city forces.

In addition to the resources of the emergency response forces of the area, the public works, water, and street departments were instrumental in operations. The public works and water department were very useful when the water level at the water plant fell to almost critical levels. The fire department was pumping water from the Miamisburg distribution center and pumped too much which burnt out one of the pump motors. A bulletin had to be issued requesting people help conserve water and the fire department quit pumping so much - the water level rose to safe levels again.

The public works department assisted in digging the channel for Bear Creek along with the streets department and the private contractor.

The public works forces were used constantly in the refueling process. The vehicles on scene ran constantly and used large quantities of fuel; the public works forces stayed at the vehicles and constantly refueled them.

The streets department was used to assist in setting up and manning the barricade and traffic control points.

All available city workers assisted in the initial door-to-door evacuation operation.

Repairs were made by workers and electricians where and as needed. Sanitation services were kept up by the usual daily workers.

EMERGENCY EQUIPMENT, FACILITIES, AND RESOURCES (Cont'd)

Two resources that were on hand and must be planned for are (1) sterile water - drinking water or surrounding water may be contaminated. Plan for safe drinking water and sterile water in case it is required for medical reasons, and (2) portable toilets.

There were people exposed to the smoke during the initial evacuation and during the wind shift. There were a few problems such as sore throats, blisters, and breathing difficulty. Respirators were purchased as soon as possible for those in the area but could not buy enough for everyone. All medical symptoms encountered have subsided.

And at the end, the city workers were involved in the clean-up - maintenance operations, gravel roads, etc.

At times they had too many people to do a job and at others there weren't enough people. Lesson learned, once an agency responds or equipment is brought in, keep it until certain it is not needed. Don't send resources home prematurely.

Offers of assistance were unbelievable. The president of the Medical Association offered any and all possible assistance. The Ohio National Guard was placed on standby and offered all vehicles and equipment.

One resource that needs to be planned for but wasn't is food. Thanks to the Miamisburg police department clerk, the food came in. They just went out and scrounged food from everywhere. This needs to be planned for - don't rely on luck. Also take the planning one step further. When the food comes in, determine what you'll do with it, where you'll put it, how it will be given out - to the populace and what about the emergency workers. There were a couple problems associated with the food issue. So much food came in (food was donated by grocery stores and about every restaurant available) that there was no place to put it. The food sat out in the sun for long periods of time and spoilage set in - some problems of minor food poisoning started showing up. The problem of how to feed the emergency workers must be addressed also. When does the food get delivered to the workers? Initially everyone ate while the crews worked and when the crews came to eat, the food was picked over or not appealing due to the heat. Also who's going to drive the food around to the emergency work areas and the shelters?

EMERGENCY EQUIPMENT, FACILITIES, AND RESOURCES (Cont'd)

Plan for and use all available resources. The Regional Transit Authority and local school buses were used in the evacuation. Without these planned for resources the evacuation would not have been as successful, especially in regards to evacuating nursing homes and those without private transportation. Plan ahead and draw up agreements with such agencies. As in school buses draw up agreements for use of the buses and also address who drives the vehicles. Also set up agreements to use schools in times of evacuation. The area Red Cross has such agreements in the Montgomery County area. Speaking of an invaluable resource; get to know, get them into the planning phase, use their services whenever available - the Red Cross.

Have lists of private agencies that can help, i.e. the Suzuki dealer. He supplied needed four wheel drive vehicles to drive in the vicinity of the site. After so much water had been applied, regular cars and trucks wouldn't work. This company helped and a lot faster than the Ohio National Guard who couldn't get such equipment to Miamisburg for four hours because they had to get requisition approval.

Sometimes resources need to be purchased if not readily available. Because there were workers in the affected areas i.e. workers refueling vehicles, additional respirators had to be purchased - 60 of them. Also extra boots, clothes, and equipment. The bills for these were turned in to the spiller - CSX (Chessie).

Suggestions thought of later:

- Be more forceful to get an EOC established if the DSA director had to set it up himself.
- Plan for an air conditioner for the command post and communications van.
- Plan for generators - DSA had several but never used.
- If the electric company dropped power lines for the electricity in the command post, why not drop power lines for the trucks that ran constantly eliminate refueling.
- Plan for cameras. Need to have cameras for videos available.
- Need private phones to get out on - had one and this was the DSA directors.
- It must be clarified - legally if necessary - what offers of assistance are from the federal government.
- Plan for backups of all equipment and not just one, plan for several backups for all equipment and personnel too.

EMERGENCY EQUIPMENT, FACILITIES, AND RESOURCES (Cont'd)

Suggestions (Cont'd)

- Plan for alternate resources. For example, USEPA didn't want to set up tracking model that locals wanted so the locals used Monsanto's model.
- Set up an EOC as soon as possible.

Bottom line - plan for all emergency equipment, facilities, personnel and resources. Use all that are available and have lists of everything and backups for them.

NOTIFICATION METHODS AND PROCEDURES

This section on notification will cover the initial notifications that were made such as: the agencies that were alerted of the problem, the notifications sent out to mutual aid forces and other assisting agencies, and the initial notification methods to warn the public and emergency workers.

The areas of notification and public information tend to overlap in many areas. Therefore, by a blending of these sections, some of what may be considered as notification may be found in the public information section and vice versa. Between the two sections all topics concerning these areas will be answered.

When the incident first happened there was a lot of confusion. A traffic/news helicopter spotted the plume first and radioed it in. Miamisburg Fire Department was notified to respond first. At this same time an off duty fire inspector was notified of the incident by a private citizen, the inspector responded and was first on scene. He also called in to the Miamisburg Fire Department. While this was going on, many received the initial notification over the police and fire department scanners. The City Manager received notification via the Miamisburg police scanner. Lastly, since a media helicopter person had seen the plume first, many heard of or were notified of the incident via WHIO-TV, Channel 7.

From this point of initial notification, many follow-up calls had to be made for needed assistance. Miamisburg has mutual aid with almost every fire department and police department on a county-wide basis. Mutual aid notification is spelled out in the written agreements and the initial mutual aid calls are automatic. The Miamisburg Fire Captain called the mutual aid forces from the fire station before going to the command post. The police dispatchers called mutual aid and police forces and sheriff's office.

Many initial notifications did not have to be made because many surrounding areas either called Miamisburg first to ask if needed or offered assistance or just automatically came to Miamisburg's aid.

There is a 24 hour notification phone number and location according to the Montgomery Emergency Operations Plan. This site is the County Sheriff's Office. As backups, however, the Miamisburg Police and Fire Departments are also manned 24 hours a day. There was also a 24 hour phone number set up in the Civic Center.

All forces that were called or notified did respond.

To avoid redundancy, refer to the Contiguous Coordinating Section to find out what state and federal agencies were notified and by whom.

NOTIFICATION METHODS AND PROCEDURES (Cont'd)

Plans were in effect in Miamisburg and Montgomery County that specified the notification process and listed the numbers of those to notify. It is felt at the local level that having a hazmat plan or annex to a plan listing who to notify during an incident will be a very valuable tool.

To supplement or backup the plans, all emergency response forces have Standard Operating Procedures (SOP) that list a call-out roster of all employees to notify in an emergency.

Locals felt all necessary notifications to agencies were made and in a timely manner. In some instances, when one agency received a notification, it relayed that message to its counter-part or other agencies it may have an understanding with such as the State Hazardous Materials Memorandum of Understanding. This procedure facilitated the notification process greatly.

Not all agencies were called. If there was plenty of help on scene and the locals felt it unnecessary to call in another agency, (just to have them on scene), they did not immediately notify the agency. For example, the State Fire Marshal was not called the first day, however, the SFM already knew of the incident through their satellite hazmat team in the area, the OEPA, and the media.

All these initial notifications had to be made by radio and telephone. This became a problem as with all the confusion of the time the phone lines jammed to the point of complete shut down at times. The police and fire radio frequencies also became jammed due to all the traffic from the scene itself, the evacuation that was in operation, and all the incoming response units. To eliviate this problem, extra phones had to be installed, cellular phone were donated, and Amateur Radio Clubs were positioned and used extensively to supplement the jammed communications systems.

At the time all the above notifications were being made, the large job of initially notifying the public of the problem was also being tackled. The public had to be notified of the problem and to evacuate the area.

The initial notification of the public to evacuate the area was by city service workers, police, and Emergency Management Services (EMS) going door-to-door and warning residents to leave the area. The methods used were door-to-door messages, the public address systems of emergency force vehicles, flashing lights, and sirens. The media was also carrying coverage of the incident. The initial evacuation was the residents within the area; the second evacuation entailed many other locations. During the initial notification, the residents were basically just told to leave the area. The second evacuation told residents of shelters.

NOTIFICATION METHODS AND PROCEDURES (Cont'd)

Still another notification was that of notifying the Governor that Miamisburg had declared a State of Emergency. This was accomplished very quickly - by 6:00 PM the first night. Plans must address the process of declaring an emergency. Ed Kovar (MVDSA) was instrumental in getting this done. He explained to the Mayor how to declare and the reason for doing it quickly.

The City Manager had final say concerning notifications and he based his decisions on the input he received from the Fire Chief, Public Information Officer, and Disaster Services Agency Director.

When the second eruption occurred, the notification process was basically the same except by this time the Emergency Broadcast System (EBS) had been activated. The media was covering 100% of the incident. By this time medical agencies and hazmat teams had been consulted about health effects and actions to take. Thus, when the second eruption occurred and the second evacuation was called for, the notification was easier.

During the second evacuation, the public was notified by the EBS and the media. This time the public was notified of health effects, actions, where to evacuate (shelters). Health advisories were constantly given and updates of the situation were announced.

Since the second evacuation was different in size, additional notifications had to be made. The Regional Transit Authority and School Board was notified to procure their bus service for evacuating people and facilities such as three nursing homes. The Red Cross was notified of its needed expertise in running the shelters that were being opened. Private contractors were notified to obtain needed equipment from them or their services such as channeling the creek or building of dams. Along with notification lists, one must have current and extensive resource lists and agency phone numbers.

The second evacuation also brought on the notification of special facilities such as the nursing homes, hospitals, and special facilities for elderly and disabled. For special facilities, the case was they called in for information before the locals could notify them. In most cases, an officer was dispatched to each facility to personally notify them. Officers had maps of all special facilities and handled them on an individual basis. There are also 500 tone activated - voice activated plectron warning devices in special facilities. The hospital called in before receiving its notification call and after discussions decided to close off their system and not evacuate.

Another method used for notifying people were the disaster sirens. Chief Menker sounded these with Ed Kovar's approval.

NOTIFICATION METHODS AND PROCEDURES (Cont'd)

Problem: due to so many radio frequencies in operation in the area, every time the sirens were sounded, the radio frequencies turned them back off. The sirens were totally useless. The Federal Emergency Management Agency said they knew this would happen some day and now they know for sure - sounds like a very costly way to find out.

Residents and agencies were notified of all emergency information through the EBS and simultaneously the Public Information Officer would issue press releases to the same effect.

All agencies were notified of current information - as much as possible. Every time a press release was given, the agencies were given copies of the same information. This facilitates information sharing and eliminates contrary information.

Also beneficial to shelters was the notifications concerning daily activities such as trash removal, sanitation, water, closing of the courts, etc.

Recommendations concerning notifications:

1. Develop plans that address notification procedures.
2. Develop written agreements with management staffs to supply mutual aid to the official staff - it was stretched very thin.
3. Have resource lists of all required notifications that need to be made along with phone numbers. Also have resources lists and numbers for special assistance.
4. Notify contiguous jurisdictions and develop a relationship with them in case it (the disaster) crosses boundaries.
5. Have it spelled out legally whether or not all agencies must be called.
6. Plan for backup methods of notification - if a large incident, the radios and phones will jam up.
7. If door-to-door notifications are made, use people who remain calm so as not to panic the residents you notify. Also instruct the personnel to tell the residents something more than "Leave the area; such as take your pets".
8. Train all stations in the operation of the EBS; not all stations knew what to do.

NOTIFICATION METHODS AND PROCEDURES (Cont'd)

Recommendations (Cont'd)

9. Work with the media - they can make or break an evacuation for you.
10. Coordinate and work with outside agencies before you notify them and ask for assistance.
11. Find out about sirens and frequencies shutting them down - plan for this.
12. Provide any notifications to ease the public - this enters the area of public information.

EMERGENCY COMMUNICATIONS

The communications that were in place prior to the train incident were the regular police and fire radio frequencies, the County Sheriff's radio frequencies supplemented by city and county agency frequencies, i.e. the public works frequencies. The main means of communications in Miamisburg was the telephone system as not all agencies have radio capabilities. As a backup communication system there was the district amateur radio clubs.

All agencies could not talk to one another by radio as there is no one common radio frequency. Many agencies have in-house radio capabilities but lack the ability to talk to any forces other than their own people. The only way everyone could talk to everyone was by telephone.

There is a 24 hour notification and communication site - the county sheriff is listed in the Montgomery EOP. In Miamisburg, there are several 24 hour notification sites - the police departments and fire departments.

There were in-house communications plans for emergency response agencies - police, fire, EMS, hospitals, sheriff and there was an annex covering communications in the county EOP.

With all the above communications available and plans to deal with it during a crisis, communications at the train incident was practically a disaster in its own right.

With 30 different fire departments, police from some 53 jurisdictions, EMS from six counties (over 116), city and county forces, hospitals, private and volunteer agencies, and the public at large all trying to use the radio networks and telephones in Miamisburg at the same time, the communications network was jammed to the point of near collapse.

The fire departments did not have one common frequency so all departments could not talk to each other. The traffic was so heavy that many times messages could not be relayed do to overriding of transmissions or not being able to talk at all.

The EMS did not have a common frequency, so they also had to use the mutual aid fire frequency. This caused even more tie ups. There was so much traffic that the EMS couldn't talk to the command sector or even the hospitals to coordinate actions. The EMS traffic had to be restricted to only crucial material being transmitted. This causes confusion not knowing what is happening in the field.

The command post was having trouble trying to talk to the field response units. The civic center couldn't get in to the command post. The command post had to rely on radios only during initial phases - they had no phones. When phones were brought in later on, the phone lines were jammed with outside calls from the public and any other forces that did not have or could not get through on the radio.

EMERGENCY COMMUNICATIONS (Cont'd)

Hospital radios and telephones were practically closed out from so many calls from field and the public trying to get medical information.

There was a poor degree of communications between on-site and off-site personnel.

The civic center (Miamisburg government offices) was opened but the phones were almost immediately closed due to jammed lines. Extra phone banks and extra personnel had to be brought into the civic center just to answer questions from the public.

Communications were very restricted initially. Due to an EOC not being opened until Thursday, there was no one in overall charge of communications. It is felt by many interviews that an EOC would have helped in coordinating of communications. As it was, communications were handled by: The police at the civic center; the assistant City Manager handled the phone banks at the civic center; the sheriff's office handled communications from their communications center; and fire department people handled radio traffic at the command post.

The best recommendations developed will not stand up to these conditions. Plans must cover a full range of backup communications.

An EOC would have helped as backup equipment could have been set up and coordinated - not possible from the command post. Without an EOC, no messages were generated for a record of all the radio and telephone calls generated during the initial phase. Not all calls were logged initially due to the confusion. This lesson must be planned for; the initial onset was so swift and with radio and telephone communications being jammed, confusion sets in and things must be handled quickly and as best they can be.

The situation was soon apparent and actions were quickly taken to remedy the problems.

1. The district coordinator of the area amateur radio club network was called and his forces were put into operation. This resource was coordinated by the DSA director.
2. Cellular One phone system brought in cellular (battery) phones for on site and off site people. They also brought maintenance vans to keep the phones fully operational.
3. Some agencies could talk on several frequencies while other responding forces could not. These agencies i.e. the Sheriff's Department shared their portable equipment with the other forces so more could talk to each other. This allowed outside forces to talk on inter-city frequencies.

EMERGENCY COMMUNICATIONS (Cont'd)

4. The Governor had the DSA director and City Manager set up phone banks and hot lines for the public calls.
5. Due to a phone company contact, telephone cables, telephone, and spare telephones were laid and brought into the command post. This gave telephone service to the field site - even a private line.
6. Several communications vans were brought in to assist in communications traffic control. There was the Miamisburg Communications Van, the Amateur Radio Van, the Clermont County Communications Van, and the Monsanto Communications Van.

With all the above resources called in and coordinated, the initial confusion was greatly reduced - not stopped. All of these types of communications must be listed in plans and resource manuals.

Briefly, all six of the above methods used were vital to the operation. The Amateur Radio Clubs were probably the most valuable assistance. There clubs will be discussed in more detail later in this section.

The cellular one phones were a saving force in initial confusion. There was so much going on in the beginning no one could talk to anyone. The cellular phones gave the command post and the key players a mobile communication ability. The phones allowed conversations to be made in private and to locations not having radios. The cellular phones allowed off-site communications. Not only did the Cellular One company provide the phones at no cost, they also brought in a maintenance van to fix them if they broke or the batteries ran down. The van also had spare radios and batteries. The mobile phones allowed many to talk that would have had no means otherwise.

Many emergency response forces willingly placed their radio equipment with mutual aid forces; if they didn't, response forces would have been hindered even more.

The phone company running telephone lines and phones to the field command post was a great asset. The phones gave even more freedom than already available from the cellular phones. The cables, phones, and spares were run into and operational in less than eight hours.

The communications vans supplemented all radios and increased the amounts of radio traffic that could be transmitted and received tremendously. The Clermont County Van was called in at the request of the Ohio EPA.

EMERGENCY COMMUNICATIONS (Cont'd)

There was also radio capability to the State - Ohio Disaster Services Agency on frequency 155.805.

Trying not to show favoritism because all the above methods were greatly appreciated and very helpful to those on site, the one resource that is felt to be the best of the six was the amateur radio club (HAMS). It was expressed by several that it couldn't have been done without the members of these clubs.

The Amateur Radio Clubs (HAMS) were called in to assist with the handling of tied up radio and phone systems.

The hams, according to their plans, came in only upon request and usually report to the Mayor or City Manager. Once the call is received by the district coordinator, he calls his 13 assistants and put members on standby. The club members are really self-activating as they usually know about the situation before they are called (by listening to radio traffic). The ham operators are automatically assigned to the police, fire, and medical forces. The hams come in to supplement existing communications systems with their goal being to tie together all agencies associated with the crisis.

The entire district ham club was activated and used. The district covers Montgomery, Greene, Preble, Miami, Darke, Shelby, Stark, Champaign, and Clark Counties. Each county has a communications plan.

For Miamisburg, the district coordinator used the Monsanto Amateur Radio Club. All others were backup clubs. Plans call for using the local club for tactical matters as they are most familiar with their own area.

There were over 20 clubs involved in Miamisburg. Some came in from Columbus and Cincinnati for training. There were over 360 amateur radio operators involved at the incident.

When they respond, they meet in staging areas to avoid mass confusion at the command post. It is also easier to receive assignments in the staging areas. Members have no trouble getting into the areas and staging areas - all members carry special identification cards to allow them access to disaster sites. Each club has a member call-up list.

The ham clubs have written agreements for response with the MVDSA, Red Cross, NOAA, Police and Fire Departments, hospitals, and others.

There are not actual lists of all club resources (it would be easy to compile) because the equipment is owned by the individual members.

EMERGENCY COMMUNICATIONS (Cont'd)

When the members receive their assignments, they either go in their own cars or in the vehicle assigned to. They can go in other than their own vehicle as they all carry hand-held radios that operate through their repeater network. The hand helds have a range of 45-50 miles.

The hams once assigned, act as the radio liaison for that group and the hams can set up separate radio frequency and net for each area i.e., one for police, one for fire, one for Red Cross, and so on. Once they set up the net, they have the ability to code messages by plugging a code into their radios - this eliminates any others from hearing that nets traffic. They also have rapid data transmission and telephone patch capabilities to offer those they are assigned to.

With the phone patch capability, the hams can fully supplement the telephone system.

The hams have 25-30 separate stations in the area to carry their transmissions over great distances. They can also interlink repeaters for even greater coverage.

Equipment they can offer as resources are hand held radios, mobile radios, repeaters, communication vans, phone patches, police, fire, and EMS radios, and even amateur television.

The controllers for the ham operators operate from their homes, not on site. When assigned, hams are mostly for communication but will get involved in any area requested. In Miamisburg they were in communications; they helped with evacuations, transporting, etc.

In Miamisburg, every agency, official and response unit had a ham operator at his side for backup communications to include every incoming mutual aid unit. The hams even work with the media but this has to be monitored; the media listens to the operators private talks and reports it as fact.

Hams do not advocate permanent equipment in place; just an antenna to plug into. They can pull their mobile unit in, plug into the antenna, turn on their unit, and they are on the air.

Hams work on bands of frequencies; they have hundreds of frequencies per band to operate on over their repeaters. They operate on VHF, UHF, HF, etc. They have direct links to the Ohio Disaster Services Agency also - Radio and high speed data sending capabilities.

The hams have permanent equipment in the Sheriff's Office and Red Cross and have plans to put permanent equipment in the MVDSA's Emergency Operations Center.

EMERGENCY COMMUNICATIONS (Cont'd)

All 99 hours of communications handled by the hams was logged for records.

One feature many do not know of and was not used in Miamisburg, is the hams have amateur television capability for on-site video coverage. They have a TV repeater so they can take a video and shoot a picture back to the command post or EOC - even call for specific directed shots. The clubs also have pilots and together they can provide aerial coverage.

All shelters had one or two ham operators in them - phones were tied up.

Don't stockpile tons of communication equipment in your community - use the Amateur Radio Clubs. There is a club or representative in every county in the state, and they are volunteers.

Recommendations:

1. Plans are a must for communications; plan for all types of backups because regular systems will fail.
2. Have resources listed - all outside sources too.
3. Have contact persons - phone company, hams, etc.
4. Compile resource lists of all available radios, frequencies, locations of such, phone numbers, compatible systems. All jurisdictions.
5. Log all recommendations.
6. Have communications tests and exercises.
7. Need to set up a common communications frequency with a lot of portable radios.
8. Need a nationally known common frequency for disasters so all responders know of it upon entering an area.
9. Use an 800 radio system - it allows setting up separate frequencies for each area.
10. Set up a private frequency for your own agency. Miamisburg Fire Department had one and no one else knew of their frequency.
11. Don't publish phone numbers to the command post over the media.
12. Limit radio traffic to essential information.

EMERGENCY COMMUNICATIONS (Cont'd)

Recommendations (Cont'd)

13. Have phone lines on other jurisdictions telephone exchange so you can get out if necessary.
14. Use hams to the fullest extent. If call them out, use them or next time they may not come.
15. Include hams in the planning process and exercises.

PUBLIC INFORMATION

Probably one of the biggest areas of concern during the incident was that of public information. The releasing of information to the public especially when an evacuation is called for is a sector that touches almost every facet of the emergency.

At the time of the incident, there was not an existing "public information" plan or Standard Operating Procedure. According to the Montgomery County EOP there is an assigned Public Information Officer with assigned backup. This Public Information Officer (PIO) is to go to the Englewood EOC. Since the EOC was not activated and due to the confusion of the initial phases of the incident, the EOC named PIO was not used. The City Manager assigned a PIO at the time of the incident. The PIO was chosen for his past experience as a prior City Manager, and now acting Economic Development Director. He had also written the Trotwood Disaster Plan.

The not yet assigned PIO reported to the civic center to assist and knew a press release would be called for. He wrote the City Manager's first press release in half an hour after impact of the incident. He was assigned the job of PIO at that point. Ron Parker was the PIO.

Ron was the overall person in charge of public information operations. If he had to leave the area or take a break, the Asst. City Manager would spell him. As they spelled each other, they always briefed each other of the current operations so both were fully appraised of all situations. Must have at least two backup PIO's.

During the initial hours of the situation, there was a lot of confusion with dealing with an unknown product, problems with acquiring the trains manifest, the coordination of so many departments, the ordering of an evacuation, and radio and phone lines being jammed solid. During these initial hours, there was one PIO assigned but there was no one source of information to the press. Many departments that had any person versed in public information were giving out information and press releases. As time progressed and the confusion wore off, the press releases were generated from one pre-designated location by one PIO. (The initial hours caused problems because there was so much different and conflicting information being given to the workers and public.) Once the PIO and his program was operating, all press releases, except for isolated cases with the National Transportation Safety Board (NTSB) and Federal Railroad Administration (FRA), were coordinated through the PIO and legal representative. All press releases were cleared with the City Manager before being aired. The City Manager had final approval of all information released to the public.

PUBLIC INFORMATION (Cont'd)

The methods used to disseminate information to the public were:

1. The EBS station (WHIO-TV Channel 7) and surrounding television stations. The main stations were Dayton stations, 7, 2, and 22, however, there were media representing television stations from all four quadrants of the state;
2. Radio stations;
3. Newspapers - not initially but each day for the remaining duration.

The television media was most beneficial. They could show live pictures of the incident and give live talks of officials at the scene.

Without media coverage, this incident would not have gone so smoothly. Statistics showed that 76 of every 100 families were tuned to the TV when the initial emergency broadcast message was given. The first EBS activation was initiated by the MVDSA Director as were the other three EBS activations throughout the situation. There was live coverage of the incident starting 10 minutes after the incident occurred. There was coverage from the ground and from the WHIO-TV helicopter in the air. When the second eruption occurred, the statistics show that, due to the time of eruption, 96 of every 100 people were tuned to their televisions as the news had just started. Where else, according to Miamisburg Fire Captain, can you get such overall public information - coverage. Another great source of public information was the ability to actually see the release plume.

The bulk of the press releases to the public covered topics on: health effects, evacuation, shelters, health care, and current situational updates.

Information on health care and effects were conflicting as the sources of information were many. Without the train manifest, it was impossible to know what was being given off and consequently impossible to tell what was to be done health-wise. Once known, information was still conflicting in the effects of phosphoric acid and thus there were varied opinions as to the health effects and means of treatment. What added to the problem, there had only been two other incidents like this and there was no data base on the medical aspects of the product. The best information given was it was an "irritant" and could cause eye and skin irritations and upper respiratory problems - hard to breathe.

Without concrete medical data, it was decided to evacuate the people from the smoke. The initial press releases to the public were hand written and given in press releases or over the EBS station and other television and radio broadcasts. As time progressed (the second day), the messages were prepared releases.

PUBLIC INFORMATION (Cont'd)

The PIO always had a uniformed police officer at his side at all times. This officer was a great asset; it freed up the PIO to strictly concentrate on press releases. The officer made it easy for the PIO to get through police barricades, the officer did all the driving, the officer always announced the location of media press releases and called the media to the location, and he always announced the PIO to the press by name and title.

The PIO always chose his words carefully when making up releases i.e., he used the word "irritant" not "toxic". This helped to calm peoples nerves. The PIO always had a legal representative with him when writing press releases to advise him on wording, liabilities, etc.

One thing that is helpful is to get the PIO a copy of the material safety data sheets (MSDS); he can use the information in his press releases.

If the on-scene fire chief felt that some information needed to be given to the public he told the MVDSA Director and PIO. The MVDSA gave the information to the EBS station and the PIO simultaneously prepared a written press release.

All press releases - live or to the media and EBS - were cleared with the on-scene fire chief and city manager. All message contents were also coordinated with the experts on scene such as the EPA, Hazmat Teams, Health Departments, and any others essential to the information - even cleared with CSX.

The releases were typed and whenever possible, the PIO took along any representatives that might assist in answering questions from the press. Many times he would take along someone from the Health Department or the Governor's Office. Whenever he could, the PIO gave "live" press releases to the public; this reduces panic and gives an air of knowledge of the situation to the public. Once the release was typed, it was xeroxed and copies were given to dispatch units, receptionists, state and federal representatives, and all people manning the phone banks - this ensured that all people had the same information according to the latest press release.

There were phone banks set up in the civic center to answer questions from the public on any issue. Extra phone lines were run into the center for more public information stations. The Governor had hot lines set up for the public to call to get current information. The phones were staffed as much as possible by representatives of local and state agencies of each agency that had a dealing in the incident.

The PIO travelled between the civic center and the command post to always check the current situation before he released any information. This kept him from giving out incorrect information to the public. All of his releases were authenticated through personally visiting the site or through the on-scene fire commanders or chief.

PUBLIC INFORMATION (Cont'd)

Before any press release went out, it had to receive final approval from the City Manager.

The PIO kept copies of all messages and press releases for later reconstruction of the incident.

There was never an all clear announcement until Saturday. The local forces felt the situation was still unstable. A television station caused a problem when it announced an all clear. Must train reporters to refrain from making expert decisions i.e., press would stand in an area talking to the public and say things like, "I'm standing in the area of so and so and there's no smoke, everything seems to be fine for a return home." This was said before the second eruption of the tank car. Also press must be trained not to report personal conversation they overhear on ham radios as expert feelings on the release. Another problem with media - local media were trained on effects of phosphoric acid and told to tell evacuees and general public not to go to the hospital unless serious problem; but "rogue" out-of-area media didn't check and told people to go to hospital for any type of problem. Basically had very good cooperation with the media, the main problems came from outside area media reporters.

A must is to get information out early, be honest, sincere and keep a low key appearance (calm voice). Also use correct terms; people were exposed to phosphoric acid not phosphorus as the media kept saying.

Initially, there was a very good relationship with the press. There was one location for press releases and they were given on the Sycamore Street Bridge. This site allowed press releases to be given in the vicinity (close vicinity) of the accident site. It enabled the press to get a release and film the site at the same time. The press were allowed to take pictures from this site on Tuesday and Wednesday. Then the bridge contractor said they had to move because he wouldn't accept the liability for them. The City Manager accepted responsibility that night. The next day the City Manager said they had to move and let them down by the command post behind the yellow perimeter tape.

This caused a problem. The locals lost control of the press. The press would then wander in by the command post, down by the accident and site yell to anyone they could for information - they were just too close.

After this it was decided to announce the location of the next press release would be back across the creek. Told if want information have to go to this location, they did and then with use of police they were never allowed back across creek and near the site.

Lesson learned - can't let media within 50 feet of the command post.

Lesson learned - don't display phone numbers on phones in command post, (hide them) if the press get close enough, they'll air the numbers and then the CP phones are no use anymore - jammed.

PUBLIC INFORMATION (Cont'd)

Give all releases from one location and have all agencies coordinate all information with the PIO. Only a couple problems in unknown press releases. The NTSB and FRA had a press conference; the PIO knew of it but not its content.

Anticipate the questions that may be asked in the press conferences.

One helpful note, Miamisburg has a cable voice override feature on their television stations. If people are watching cable TV stations and not local news stations, the cable TV can cut in and override the stations to give voice announcements.

The major press releases were on evacuation and shelters. The initial evacuation messages were verbal - the public was warned by fire, EMS, and public workers going door-to-door to evacuate the area. This section will not go into detail on shelters and evacuation procedures - refer to that specific section. There was verbal evacuation warning, and very limited at that. The public was warned of the accident and told to evacuate the area immediately. There was nothing released on what to take with them, where to go, how to get there - just leave quickly. The EBS was activated and told of the accident, the health information as sketchy as it was, and told to evacuate.

For the first couple hours there were no shelters open, but as the evening progressed, shelters were opened and the public information became more detailed. The media had full coverage of the incident so the public was informed on progress made. As time progressed, shelters were opened, their location was announced by the media and information on the effects, health measures, hospitals and so forth were announced. The first night information became more detailed as the situation was brought somewhat under control.

The first nights evacuation information was minimal but effective. Once the shelter phase had been put into effect, the public information was geared mostly to continuous health advisories and advisories to not return home.

During the next day releases were of progress in the situation, advisories to remain out of area, health effects, hospitalization if necessary. An all clear was never given to return and a press conference was slated to tell the public what decision had been made on how to handle the situation when the second eruption occurred.

One of the biggest helps in getting information to the public after the second eruption, was the TV. 96 of every 100 saw the second eruption on TV. This helped to get people to evacuate sooner.

PUBLIC INFORMATION (Cont'd)

Lessons were learned and the public information to evacuate the second time was better, quicker, and more informative. Information was sent out over the activated EBS station and live press releases. People were reminded of the smoke and health effects, to stay out of the smoke, evacuate the areas, the location of staging areas if had no transportation, and the location of the shelters. Routes to take to the shelters were not given as the feelings were that the cloud could be seen and because the TV from the air coverage was telling what routes were jammed or closed and which way the wind was blowing.

For the remainder of that night, public information remained constant on progress updates and health advisories. Now press releases were geared directly to the shelterees as the city had been cleared. Press releases and the PIO talked directly to the shelteree and told of their safety, told that their homes were secure and areas being patrolled for looters (only two incidents) - basically information to calm their nerves.

Thursday brought slight changes and press releases were now geared to the newly created zones - irritant, caution, and restricted - that had been set up based on the ODH and CDC findings. Protective actions were announced per zone and releases were structured on this information specifically. Releases finally started to allow slight returns home except for the restricted zone.

Public information was given the personal touch as council members and others went to the shelters to talk to the shelterees. Information was given about finding missing friends and relatives.

On Saturday, the all clear was announced to the remaining shelterees. Members of the staff were sent to shelters to personally release the shelterees. Public information on what to do upon return was given: avoid the creek and river, how to clean food, crops, how to handle live stock, what health precautions to take, etc. Return routes not announced, just let get home as quick as they could.

Follow-up releases were given and TV coverage told of cleanup methods and progress that followed.

Without the press, the incident would have been much worse and if it had been a toxic or deadly product release and the press had not been involved, people would have died.

PUBLIC INFORMATION (Cont'd)

Following are local suggestions in dealing with the press:

1. Work with the media.
2. Have the media involved in planning and exercises.
3. Set the ground rules before interviews, never go "off-the-record."
4. Train the media in local response operations.
5. Train media stations in EBS - not all knew about procedures.
6. Work with local media to help you handle out of town stations and problems they can cause.
7. Be fair with the media.
8. Develop a rapport with all media and their crews.
9. Press will respond regardless, let them do their job - they'll do it one way or another any how.
10. Start a public education program - the public was totally unprepared for this situation.
11. Train media with DSA, Red Cross, CHEMTREC, Hazmat teams, etc.
12. Give plenty of press conferences; every 60-90 minutes even if there are no changes.
13. Enlist ham radios to use their TV capability.
14. Set conference times to coincide with press deadlines Miamisburg had conferences always at 11:00 AM, 5:00 PM, and 10:00 PM.
15. Have only one media information release point.
16. Check scene before release information to the press.
17. Have only one PIO.
18. Restrict the airspace to all craft - even press helicopters. This causes problems with the press but helicopters cause helio-thump from their blades making it impossible to hear on the ground - especially when crews are in protective equipment.
19. Do live press conferences whenever possible.

ACCIDENT ASSESSMENT

The south bound freighter bound for Albright-Wilson Company derailed carrying a mixture of hazardous materials. Cars 24-38 derailed with car number 30 containing white phosphorus. When car number 30 derailed it was ruptured and a huge cloud of phosphoric acid was being released to the air. Five other cars were burning around number 30; one containing tallow, one containing paper rolls, and three containing automobiles.

All the above sound as if the scene was easily assessed so fire fighters and other responders could extinguish the problem. There was one very large obstacle in their path. The code of federal regulations states that in train accidents, the manifests are to be turned over to the fire departments for purposes of assessing the hazards they may face. For this train derailment, the railroad people decided not to allow the fire chief to see the manifest or tell him what was on the train. (According to a local interviewee, although the code of federal regs say turn the manifest over, the railroad manuals tell their employees not turn it over - they may be fired). This creates an almost impossible ability to assess the scene and at the same time it hampers a decision on how to fight the problem. To hamper the operation further, the railroad tried to take charge of the scene and remove the cars without an investigation.

The accident was first spotted by a news/traffic helicopter who called the fire department and his station. At the same time an off duty fire inspector was told of the accident by a private citizen. The fire inspector also called the Miamisburg Fire Department. The inspector arrived on scene first and according to fire code was responsible for setting up the command post.

The initial command post (CP) was a car. The Miamisburg Fire Department Captain called the Regional Hazmat Team and contractual mutual aid departments to respond. They have box alarms there which were sounded and then the mutual aid departments were called. This he did before responding to the CP. The Fire Chief was notified and made the decision to take charge of the scene. (According to law the Fire Chief is in charge of the scene.) When he arrived on scene, the command of the scene automatically transferred to him (the chief).

The regional hazmat team is composed of representatives of 26 departments in the area. It is policy that three members respond to the scene, survey, and call in all the required forces. The hazmat team assessed the problem to be phosphorus and called CHEMTREC for information plus used their guide books on hazmat. The information told them of the product and how to handle the scene. CHEMTREC also called Albright - Wilson Company and had them respond to the scene as they are a member of the CHEMTREC's Phosphorus Emergency Response Team.

ACCIDENT ASSESSMENT (Cont'd)

Calls were also made to notify the Ohio EPA and list of 10 other state agencies and seven Federal agencies - refer to the Contiguous Coordination Section.

NOTE: During the assessment it was found that the rail line had been inspected last year and had been written up with 15 defects to include a ruling to lower the speed limit. The people on scene were told all defects had been corrected by June 17th, 1986.

Based on hazmat books, CHEMTREC, the hazmat team, Ohio EPA, Ohio Department of Health, and CDC opinions the incident was assessed and the decision was to fight the problem with water.

There was tons of conflicting information coming in on how to handle the situation - what many who called in didn't know there were several holes in the car that couldn't be plugged. All this information hampered assessment operations as the information had to be studied and separated-good from erroneous.

To hamper operations further, communications were severely hampered - refer to the Communications Section.

As incoming mutual aid forces arrived, they had to be put into staging areas for assignments. They also had to be briefed on the situation: overall operations, hazards, the evacuation situation; health information, communications, plume tracking and maps.

With all the mutual aid arriving and all other agencies, assessment was being hampered. It is necessary to limit CP members to the essential personnel. Also it is needed to have some sort of ID for all incoming personnel - to distinguish who's who and to eliminate the bluffers.

To assess the situation to conduct response operations, maps for the area were brought in. Along with maps of the area, Monsanto and Clermont County supplied weather information. Monsanto set up to provide a plume tracking system which gave out a plume location overlaid on a map of the area every 15 minutes.

Before putting all the above into operation, the fire departments and teams had followed assessment SOP's which state that upon responding to the scene:

1. Stop short of site,
2. Survey (as the three man team did)
3. Make calls for information and assistance,

ACCIDENT ASSESSMENT (Cont'd)

4. Evacuate areas if necessary, and
5. Respond and neutralize the scene.

Using the information received, the maps were used to set up zones of operation, control points, evacuation zones, placement of response forces, and personnel locations.

Once maps had been set up to follow and assess the situation, the Incident Command System was activated. This system is a means of controlling the scene. Through the ICS, the scene is set up into sectors with roles assigned to each sector. Authority is also delegated to a commander assigned to each sector. Some of the sectors were a staging sector, a communications sector, food sector, media sector, water sector, hose and air support sector, etc. Some of the sector roles were as follows:

CP

Safe locations

Involve reps. from all agency resources
Coordinate with neighboring jurisdictions
Media liaison
Responsible for on-scene decisions

Hazmat Sector priorities

Gather information about scene
Evacuation decisions
Containment control

Law Sector

Perimeter control
Traffic control
Security operations

Medical Sector

Medical responses to public and emergency workers
Assist in evacuation
Medical operations at shelters
Hospital coordination
Release of medical information to public

ACCIDENT ASSESSMENT (Cont'd)

Sector roles (Cont'd)

Evacuation Sector

ID appropriate sectors
Provide and oversee transportation
Staff/Supply centers
Coordinate information into and out of shelters

DSA

Information exchange
Resource identification
Assist in evacuation

Staging Sector

Find safe locations
Provide ample resources and backup
Provide vehicle maintenance and fuel
Stage personnel, food, shelter, relief

Media Sector

Early notification of local media
Consistent information and updates
Early messages - dangers, evacuation information, advisories.

According to officials, the ICS worked in Miamisburg.

With these sectors and the tracking of the plume, assessment of actions to take was going well. Then a big kink, fire fighters found a sulphur - like residue near the burning phosphorus car. Again the railroad was withholding information; as a matter of fact, they lied. Early on, CSX had said there was a sulphur car in the area but they had pulled it away.

This caused more delays and a re-assessing of the situation because the mixture of these two products and water would create a toxic product. The sulphur car was removed and there were no problems.

The decision process was one of talking about the problem, deciding on a course, getting the information to the field, action and then always have a plan B if A didn't work.

ACCIDENT ASSESSMENT (Cont'd)

Once sectors were set up, operations were carried out to put water on the tank car, dam up Bear Creek and construct other dikes. Through Monsanto, the plume was tracked which allowed the decisions of zones of evacuation; through the Ohio EPA air and water were monitored. (U.S. EPA was asked to monitor air but they said they couldn't get quick results and they let Ohio EPA do ground and water monitoring). By assessing the air, water and ground and taking this into consideration with the health effects, all on-scene operations and many recommendations for the off-site operations were handled.

The CP made recommendations to all areas and the civic center based on their assessment of the situation. Since the police and fire departments responded together, in this case, they set up perimeters together.

Not only was the assessment information received from EPA, Monsanto, the hazmat teams and others used for Miamisburg, it was also used to make recommendations of actions for surrounding jurisdictions to take. Not all jurisdictions followed suggestions i.e., Moraine rescinded an evacuation suggestion. What liabilities were at play here? What was Miamisburg's liability to Moraine? These legal questions need to be answered.

Most assessment equipment was available locally. Evacuations were based on the plume assessment and also on the police departments assessment of how fast they could move an area and to where.

When operations were progressing and decisions had been made to right the car and accelerate the burn, the forces had to re-assess the situation as severe storms threatened the area. The operation was carried out based on earlier assessment of the situation and actually the rain shielded the workers but it also caused a flood and extended fish kill.

Once the burn was accelerated, they once again had to assess the situation for the next plan of attack - cut off covers, accelerate burn, flood with water and off-load product.

One problem in this area is that not all necessary agencies were involved in the decision - making process.

The final act of accident assessment was the EPA, et al monitoring the air, water, ground, crops, animals, etc. and giving out information on all these areas after return to homes.

Assessment is a section that lends itself to frustration due to the constantly changing conditions and decisions.

ACCIDENT ASSESSMENT (Cont'd)

Recommendations:

1. Simplify manifest, train drivers on their location, who to give to if an accident. Also train subcontract drivers and add response information to the manifest.
2. Have CP keep records of all mutual aid offers.
3. Staging areas are a must - stock them heavily, set up several areas, always have fresh troops in staging areas, stage EMS close to the CP.
4. Plan for extra communications of all types.
5. Use cameras and log when pictures were taken. Take videos of all sites. Take videos of ground level and aerial views.
6. Use helicopters - but wisely.
7. CP must be mobile; it had to move three times as well as all other forces. If move a location, tell where you went.
8. Set up an EOC with a neighboring liaison to assess surrounding jurisdictional problems.
9. Start decontamination operators early.

The incident lasted 110 hours before the all-clear was given.

PROTECTIVE ACTIONS

(Shelter and Evacuation)

To avoid redundancy, this section will only address shelter and evacuation operations as all operations other than these have been fully discussed in the other attached sections.

The train derailed at 4:29 PM on Tuesday, July 8, 1986. The Fire Chief, on-scene fire commander, immediately ordered the evacuation of parts of Miamisburg and West Carrollton. The fire chief ordered the evacuation due to the immediacy of the situation. The City Manager, who had overall authority in the situation, concurred with the fire chief's decision.

There was no plan for evacuation during the initial call. The evacuation was based on preliminary information about the plume, being able to see the plume and based on past experience of the police departments. The engineer, public works employees, police, sheriff's office and EMS were called out to the areas to be evacuated. The initial evacuation was handled by these people going door-to-door telling the residents there had been an accident and they should evacuate their homes immediately.

These were approximately 1650 people evacuated Tuesday night.

The residents were not told where to go or given routes to get there. They were not told what to take with them such as medicine, clothes, etc. A lot of this information was not given as all responders and management thought the evacuation would only be for a short time and the situation would end at anytime.

The initial evacuation was handled door-to-door with the aid of emergency vehicles' flashing lights and sirens, the use of bullhorns and public address systems on the vehicles. People were told to go immediately and given the health problems associated with the product.

People were not prepared for this type of a situation and were reluctant to leave the area. Many people tried to stop the door-to-door announcers to stop and help evacuate them and their friends or relatives. This tied up the evacuation process - CAN'T STOP in this operation or all residents don't get notified. What was done was; names and addresses were taken and the warning of residents continued. Upon return to the fire station, the names and addresses were turned in and vehicles were dispatched to the locations to assist in their evacuation.

People also refused to leave the area. In this case, names of the next of kin of the resident were taken down and then the warning person continued on to the next home. This plus the residents seeing the responders in protective clothes and respirators usually got the person to leave. If they did not, they were left alone (this was not a martial law/forced evacuation) and after all had been warned, a second sweep through the area was performed to pick up any stragglers.

PROTECTIVE ACTIONS (Cont'd)

(Shelters and Evacuation)

Initially, there were no shelters assigned; people were just told to leave - where to? Once shelters were decided upon, the fire chief chose the Carnegie Center but changed his mind and the Miamisburg High School was opened. The Red Cross did not choose the shelters, they were just called in to run them. Some shelters were opened before they were staffed. The first shelter was opened for two hours before the Red Cross could staff it.

The Red Cross wants to be included in the planning process. They have and are compiling further lists of shelters. They suggest making them the party responsible for shelters and ask them which shelters should be used.

Not getting the shelters immediately staffed caused hardships - the people just went in and sat or laid on the floor. They were not registered into the shelter. They had no food or cots or blankets, and nothing to do - no TV or communications about the incident. Don't open shelters unless have a staff to run it. Red Cross couldn't locate the shelters.

The first night there were three shelters opened in Miamisburg and one in West Carrollton. This caused problems with people looking for missing relatives; only one shelter was needed in Miamisburg, not three. Red Cross was not asked or confronted in the choices. One shelter Bean High School was not coordinated and had to be broken into to open as a shelter. The City Manager (CM) took the responsibility as a fast choice had to be made due to a wind shift.

Most evacuees went to relatives or friends homes, hotels, or motels, or totally out of the city/county. The shelters only received approximately 10% of all evacuees. The shelters had more of an upper middle class population and there were very few transients.

The EBS was activated but the messages were not pre-printed messages and the information given was felt to be sketchy. Basically people were told to evacuate the area but not told what to take, where to go, what routes to take.

It was decided not to announce routes in case the wind shifted; they didn't want to catch the people all on the same road. Also the plume could be seen and it was felt people would move away from it.

Mutual aid forces were called in from police departments and the sheriff's office to set up and staff road blocks (control points) and to secure the areas being evacuated. The police were told of closed roads and shelters (when decided upon) to announce current information and give directions to the evacuating populace. Helicopters also announced what roads were in the cloud and routes to avoid. The road blocks were kept in place through the night and people kept out.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

On Wednesday, the officials had been meeting on their options. Just before 6:00 PM they emerged to go on the air to announce their decision and at 6:05 PM the tanker shifted, ruptured, and the second evacuation was ordered.

The second evacuation was ordered by the fire chief with approval of the City Manager. This cloud was much larger and was staying on the ground. The area of its coverage was so large that six areas were told to evacuate; all of Miamisburg, West Carrollton, Centerville, Washington Township, Jefferson Township, and Miami Township. The City of Moraine was within these areas but because their Mayor had gone up in his own plane to see the plume, he cancelled the evacuation for his town - he felt it unnecessary.

This evacuation went much better; (1) An evacuation plan had been devised since the first move, (2) Most people saw the second eruption on TV and knew the problem, (3) The people could see how much more was being covered by the cloud, and (4) There were more crews on board to help with the evacuation.

When the second eruption occurred, the WHIO-TV helicopter was filming it and from that point on they and all other TV stations showed constant coverage of its movement. The EBS was activated again and this time pre-printed messages were in place. The EBS and all TV and radio stations were giving information to the public to evacuate, information on shelter locations, information on health effects, and constant updates on the situation.

The evacuations were based primarily on the Monsanto weather station that gave up to minute information on wind shifts. This, coupled with the plume tracking model set up by Monsanto which gave an updated printed map every 15 minutes, and the in place evacuation plan and map sectors made the evacuation much easier to control.

Lt. Lowther of the Miamisburg Police Department was put in charge of the evacuation. The plume maps which showed the new location of the cloud and the very visual cloud enabled public information to be accurate to evacuating people. Most of the control points were handled by forces other than Miamisburg police as they were busy on daily duties and not large enough to cover all points. All totalled, there were 67 cruisers used and 54 control point crews in the evacuation. Due to the magnitude of the second evacuation, the entire area was closed off and initially no one re-entered. The areas to be closed and routes closed were changed and adjusted for distances based on the changes in wind and cloud.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

The second evacuation was more hectic than the first due to the area of coverage and because it hit at rush hour. There was a lot of congested traffic in areas. The downtown area with escaping rush hour traffic was badly congested as was the areas of Route 741 and Interstate 75. Route I-75 had to be closed around the Dayton Shopping Mall area. The mall was evacuated in approximately 15 minutes but with normal rush hour, closing a mall, and I-75 that the mall exists onto - there was a large traffic jam. There were waits reported as long as 30 minutes to go one block or 1 1/2 hours to go one mile. Traffic did move though according to plans. The estimated evacuation entailed 35-40 thousand and they were all evacuated in a couple of hours. It was compared to a reds ball game exodus and considered much better.

The men manning the control sites were kept informed of traffic problems, and were given full information on what were opened to the public. There were a few problems but not many with people trying to break through barricades to return home for their family members or other reasons. Initially no one went in unless they had a very good reason. One problem of the evacuation that needs to be planned for is "Latch-Key" children. Those children who are home all alone while their parents are at work. The parents couldn't get to them and they are instructed not to open the door to strangers. Do people going door-to-door know they are in the house? If not, how do the children evacuate? Parents were allowed back into the areas - not restricted area - and children were removed by them or RTA, fire, police, and EMS personnel. There is also the problem of shut-ins and elderly - discussed later.

Again, no routes to the shelters were announced (except for those roads that were reported closed by the police or backed up or in the cloud as reported by the helicopters). Some plume maps, as shown on TV, were overlaid on street maps and by looking at the plume one could see the road closings - this was not possible if already in your car. The routes were not announced to shelters because (as before) officials were afraid if there was a wind shift all could be caught on those routes plus it was felt people could see the cloud and steer away from it.

Problem: Evacuees said once in the cloud it was like driving in a fog - how could you tell where it was coming from, and what roads it blocked. Some say they (without route directions) exposed themselves to the cloud much more than need be as well as running into road blocks - need to give directions.

There were no accidents (vehicle) during the entire evacuation. When asked, it was said that had there been an accident, the cars would have been pushed aside and transportation arranged for the accident victims.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

If the cloud came at a control point, the police and volunteers would get in the car and leave the area until clear and then return. There were no reports of people abandoning their work posts.

All evacuation information was verbal - nothing written. There was no time. If there were an active public education system, the public could have had prescribed information that told of evacuations and what to do in one which would have helped - the public was totally unprepared for this problem.

One very large problem, which could have been eliminated with a public education program on this subject, was what to do with pets. It was not told to evacuees what to do with them. This caused problems - some people brought them into the shelters and some would not leave the area without them, and they tried to break through barricades to get to them. If not in restricted areas, people were allowed in to get them.

People for the largest majority evacuated in their own vehicles or with friends. Those that were stranded without transportation from the area to a shelter were told to report to one of three announced staging areas. People who reported to these staging areas were picked up and transported to a shelter. These transporters for the largest part were the Regional Transit Authority and Miamisburg High School buses and drivers. The RTA and school buses are planned resources in the county. NOTE: The Red Cross and others have written agreements to use schools as evacuation centers, but a separate written agreement for use of school buses and drivers is needed. The EMS was a large part of the evacuation process also.

For those who refused to leave the areas, as in the first move, their names of next of kin were taken and they were left to stay - this was not a forced evacuation. NOTE: It needs to be legally stated in understandable straight forward language who can order an evacuation and when can it be forced?

Also evacuated in the second flareup were three nursing homes. The RTA, EMS and some school buses were used in this movement. The nursing homes are responsible for taking care of their patients so they called officials and Red Cross when they were ready to evacuate. The nursing home administration, since the responsible party, chose where they wished to evacuate to. Usually an EMS or RTA person responded to site and with the administration gathered all the patients in one area and explained the situation. All accounts show the patients were very helpful, but there were cases of frustration and quite a bit of fear. NOTE: There was originally one death - a 92 year old nursing home patient - that was thought to be associated with the situation and evacuation. The courts said it could not be attributed to evacuation or old age specifically and the law suit has been dropped (for now).

PROTECTION ACTIONS (Cont'd)

(Shelter and Evacuation)

The RTA and EMS personnel actually assisted in helping people on the buses and calmed patients nerves. Two nursing homes were evacuated to the same shelters as the public used, and one evacuated to its satellite offices. Also helping ease some of the problems, were the patients families who also helped evacuate the patients. The nursing homes only evacuated medical records with the patients and some medications. Most equipment was not evacuated as these homes were not ambulatory - they were interim care facilities. RTA said, however, that in some cases wheelchairs, walkers, and a bed were also taken.

The elderly were evacuated by the Senior Citizens Organization. They have a listing of the elderly and shut-ins the county and these people were contacted and evacuated by the Senior Citizens Staff and RTA.

The hospitals in the area were not evacuated. At one point one hospital was threatened by the cloud but since the hospital could completely close up and operate on their own air supply system, they just closed all air sources and used their own air system and remained where they were.

Occasionally the RTA and school buses had trouble getting through road blocks but were usually allowed through. NOTE: Lists of those allowed in and out of the area need to be given to the police barricade forces and those individuals need to have complete or special identification. At one location an RTA bus with nursing home patients was stopped and was not going to be allowed to pass - after a couple calls it was straightened out. The RTA driver and official said no problem - they were glad the police had their interests in mind.

Some had ID to get through barricades but they ran out of passes. Some had form letters signed by the CM i.e., the cellular one phone people.

Overall, it was said the evacuation went very smoothly and there were only isolated incidents of confrontation. Some people wanted back in to the area and some businessmen threatened lawsuits if not allowed to return and open for business.

It was basically asked by officials if the businessmen would assume all liabilities for himself, and all customers if the wind changed and caught the people. When the businessmen said no, they were told that since they would not assume responsibilities then the city would and they had to stay out.

All shelters had ample parking and there were no security problems or necessities.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

Campgrounds were not announced as shelter or places to go for those with RVs, but said would have been a good idea to include this in the EBS messages.

There was only one instance, as far as shelters go, that a site was evacuated more than once. Miamisburg High School was a shelter and because of a wind shift the cloud was coming right at them. The High School was evacuated to the U.D. Arena - not an approved Red Cross shelter - and when the people arrived it was found to be unsuitable for shelter. The people then had to be re-evacuated to the Convention Center. This caused minor problems of re-routing people, built up frustrations, and doubts in the public's mind. The Convention Center housed over 2000 people.

Once people had evacuated, the functions of sheltering were put into operations.

There were problems from the start with sheltering operations. The largest was the Red Cross was not asked or coordinated with in the choice of shelter locations.

Originally, due to the swift onset of the problem, people were just told to get out of the area - there were no shelters set up or staffed.

The first shelter chosen was Carnegie Center. It was chosen by the fire chief but it had to be changed to the Miamisburg High School. There was a 1 1/2 to 2 hour delay between the announcement and opening of the first shelter and the staffing of such. Red Cross feels if they had been contacted and used in the choosing of sites, the shelter process would have gone more smoothly. Due to a wind shift (sudden) the fire chief was forced to pick one shelter - Bean School - however, it was locked and the CM gave his permission to break in. This was a spur of the moment decision but there was no staff for the shelter.

The Red Cross felt it was used as a resource instead of a response agency. They want to be involved in shelter and emergency planning. They want to be in charge of choosing shelter sites in disaster times - more coordination in getting good shelters. One bad shelter was chosen as previously mentioned - the U.D. Arena - this caused people to be evacuated twice when it should have been once if the Red Cross would have been contacted for a proper site choice. The Red Cross has a listing of approved shelter sites in the area and they are expanding the lists at this time. Agreement exists with these sites for use as shelters. Most good shelters are the schools as they have kitchens, rooms, showers, toilets, heat, water, etc.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

Spontaneous shelters were opened in surrounding townships, etc. by the township trustees and officials. This was a large problem. They opened these sites, many not approved and none were staffed. People just went in and sat or laid on the floors. The Red Cross staffed those sites as opposed to closing them and having the people come to already staffed sites. It is felt that these sites were opened for publicity reasons. There was no coordination of opening or staffing them by the Red Cross. Many times the Red Cross was not told of shelter locations and they had a hard time finding a lot of the shelters. No shelters went more than 1 1/2 hours without having a Red Cross staff on site.

Recommendation: Don't open spontaneous shelters without staffs. People are already scared, don't just open a building and herd them into it.

Once the shelters were opened and staffed, all went rather smoothly. The Red Cross sent a staff crew to each shelter. The crew consists of a trained manager, volunteers, a nurse to handle minor injuries, prosthetics, lack of medication, and can diagnose and call for further assistance (EMS). Their staff also includes mental crisis counselors.

At the peak of the large evacuation there were 10 shelters operating simultaneously. Overall, 12 shelters were opened, including spontaneous shelters (the ones known of as some closed as rapidly as they opened).

The shelters were not like home but most, once staffed if in appropriate buildings, had TV's, newspaper, and radios for incident information; VCR's and tapes, aerobic exercise classes, clowns for the kids, balloons, and ranges. Much was done to take their minds off the problem.

To ease the shelteree's minds, there were also announcements made concerning the daily functions of the town, and also on items such as: no looting problems, the security of their homes and neighborhoods, etc.

The shelterees, according to Red Cross and officials, were great. They offered their services in the shelters and helped each other out whenever they could.

One problem caused by not coordinating shelter sites and the Red Cross not knowing where they were was that of registration. When shelterees arrived before staffs, the shelterees just wanted to sleep or would not take time to register. Especially some in the Convention Center; 2000 people won't stand long enough in line to be registered if tired.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

Associated with the registration problem was that of family inquiries. Family members trying to find and wanting to talk to other family members that they were separated from caused large problems. Since all the people did not get registered (as above) then many times one family member could not talk to another because the staff didn't know that persons location.

NOTE: Registration of all is a must, but it must be planned for - how if people are tired or don't want to do it? Another reason for this problem of contacting family members, according to Red Cross, is that 12 shelters were unnecessary. Some shelters had less than 50 people. If coordination would have been done with the Red Cross, all these shelters would not have been opened.

There were other problems identified. Largest was that of animals (pets). Evacuees were not told what to do with their pets. Many brought theirs into the shelter.

Animals and people in the same shelter doesn't work. It was corrected by setting up a kennel area in the shelter but sanitation topics were a problem. The Red Cross says this can't or shouldn't be done but with no instructions, the shelters were stuck with the problem. The animal society has a plan for what to do with animals in an emergency. If they had been contacted, this problem could have been eliminated. Their plan has to methods of handling the problem: the people drop the animals at the animal shelter and get a receipt or the animal shelter will send its trucks to the evacuation centers and pick up the animals, give a receipt and take them to the animal shelters. The MVDSA, Red Cross, and Animal Society will draw up an annex for animals in the revised Montgomery/Greene County Emergency Operations Plans.

The media was a problem. They kept coming into the shelters and bothering the shelterees. The media would not go to the shelter manager, they just barged in and talked to the shelterees. The Red Cross has a privacy act they are to uphold in their shelters. The media would even come in at night and shine lights in evacuees faces taking pictures of them sleeping - not for long. This was partly due to Red Cross' error - they had no media liaison persons assigned. The Red Cross, MVDSA, and media will work together in answering these type of problems when the plan is revised.

Communications were not good. Phones were jammed. Until amateur radios were brought in the situation was poor. The Red Cross has its own radio system and their trucks also have radios, but they weren't used.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

The shelterees were always fed. Food came in constantly. Food was brought in by fast food restaurants - donations, and by area grocers - donations. Actually had too much food - had no place to keep it (refrigerated) and it sat in the sun for long periods of time. The Red Cross gets food from restaurants, agreements with grocers, and most times will use schools as shelters because they can use the school's USDA food supplies at no cost. The shelters dealt with the Red Cross headquarters on the coordination of food for each shelter and all supplies. Supplies were no problem as there was a District Field Supply Center in Dayton for Red Cross supplies.

There were two deaths during the incident. The nursing home death previously mentioned - not associated with the hazmat spill directly. The other was a man died when his van caught fire while he was sleeping in it for shelter.

There was no overall single control of these operations; it was a joint effort between city officials, Red Cross, Fire, EMS, MVDSA. This operations went very well according to all and there was great cooperation between all forces. Felt an EOC would have been very helpful for shelter coordination. Until an EOC was established, shelter information and statistics were not relayed to a central facility for coordination.

Overall the shelterees/evacuees did not complain. Their main concerns were:

1. Long-term effects of cloud
2. Long waits
3. Getting a cot
4. Finding a quiet place to sleep
5. Eating the same types of food
6. Endless TV coverage in the shelters
7. How to wash clothes
8. Taking cold showers.

From the outside portion of sheltering, the police had no security problems to speak of. There was one fight between a man and woman. There was one garage and one house burglary. Police said these statistics were better than routine daily operations.

The media caused problems when a reporter would stand outside and report he was in the area and there was no problem. Because of this, people wanted to return home which caused pressure to close shelters. Also some municipalities gave the all clear before Miamisburg which put pressure on officials. Miamisburg, however, was closer to the site than some areas.

PROTECTIVE ACTIONS (Cont'd)

(Shelter and Evacuation)

As the zones (3) became clearer, the areas perimeters and restrictions were relaxed and people could return to their homes (all except for the restricted zone).

Shelterees were personally talked to when released. They, through the media, were briefed on return precautions - such as stay away from the creek and river, what to do with water, crops, medical problems, etc. All were told to get pulmonary function tests. When given the okay to return, no instructions were given; just leave and get home safely.

Some statistics:

12 Shelters used
3960 sheltered
10,891 meals served
Red Cross staff was: 20 staff members
320 volunteers

The decision could have been to stay in place and close off air sources instead of evacuation and shelter. After getting the EPA air tests, all are pleased they chose to evacuate. Also all are of agreement in that it was lucky Miamisburg's incident happened at the time of year and day that it did. It was summer, schools were out, and it was a daytime scenario.

Recommendations:

Announce what to take to shelters, especially needed medications. Many forgot theirs. It was corrected by having a medical physician at each area to determine how long one could go without their medications. For one day (first move) no problem usually, but during second and longer evacuation their were doubts. If didn't need ok; if did the EMS, Red Cross, etc. made arrangements with a pharmacy. Also, some if living in outer areas were allowed to return home to get their medicine.

There were staging areas for transportation. Need staging areas for shelterees. This would help determine which shelters and how many of them would be best to open.

COMPOSITE

NURSING HOME EVACUATIONS

1. Biggest problem for Friendly Nursing Home was they were moved to the bad shelter and then re-evacuated to the convention center.
2. Patients too weak to be sheltered went to the hospital. Problem - after released from hospital, they could not find what shelter their group was assigned to.
3. For all homes, residents were evacuated by employee cars, vans, family transportation, and RTA/EMS.
4. All took linens, and patient records. The Red Cross provided extra linens if needed, cots, blankets, and also hospital meals or supplements to special diets. Some complained of type of food.
5. All felt evacuations were well organized and all were very friendly.
6. The Red Cross paid the city to come in and buy and cook food and do laundry.
7. Nursing home staff and aids take care of and are responsible for their own patients.
8. Only equipment evacuated were wheelchairs, linen, food, records, some oxygen tanks.
9. All homes have their own evacuation plans and test theirs regularly - some monthly.
10. Shelters had activities person from the home, church, and girl scouts to entertain patients - no complaints voiced.
11. One home slept on linens and pillows on floor, one had cots and linen/pillows.
12. Only sheltered overnight.
13. There were no injuries during evacuation or sheltering.
14. Were set up in own section of shelters - not special shelters for them but specialized treatment.
15. Had TV's and sing-alongs also.

NURSING HOME EVACUATIONS (Cont'd)

16. Due to "patients" and age and equipment, took a long time to evacuate. It took 1/2 - 3/4 of an hour to load each bus and get it moving.
17. Made copies of medical records. One home had a person stay behind to answer calls from family members who might call.
18. They ran out of wheelchairs - needed more.
19. The United way is trying to set up supplying geriatric chairs for shelters.
20. RTA returned them to the nursing home.

PROTECTIVE ACTIONS AND HAZARDOUS MATERIAL EXPOSURE CONTROL

(Emergency Workers)

This section will combine two functions. One function is on protective actions, which can be broken down to emergency workers and public, and one large area of protective actions as exposure control (the second function).

Upon receiving the initial call to respond, there were no initial exposure control methods in place or set up. There were Standard Operating Procedures for assessing the scene and the scene was fully assessed before anyone entered. Assessment procedures were very lengthy due to no train manifest and conflicting information. It was an 1 1/2 hours later before the first water was applied - situation had to be fully researched before acting.

Once the scene was assessed, control points and access points around the scene were set up. Zones of operation on the scene were sectioned off so people didn't wander into unsafe or hot zones unprotected. The work zones and control points were set up topographically. Then sectors were set up such as; water, air support, medical, hoses, backup and staging. Commanders were assigned to each sector for control purposes.

Initially there was difficulty in getting all the necessary people together to talk and make crucial decisions. There were also a lot of agencies represented on site and there were a lot of bluffers or so called experts. One thing that must be done immediately is ID everyone and anyone that comes into the area later on.

There were approximately 150 people at the overall scene which includes the hazmat team members, on scene people (fire, EMS) and all perimeter people (police, EMS, public workers). The situation determines what protective actions will be taken i.e., the Miamisburg incident was classed as an irritant, not deadly, thus people were in the cloud from time to time and the operating zones were set in close to the site. If this incident had been a different product, one that was deadly - a poison - actions would have determined different zones and less people in the area.

One thing that is a must is to plan for the CP to be mobile as well as all other response forces. The CP in Miamisburg had to be evacuated and moved three times as did perimeter forces when the cloud approached them in times of wind shifts.

Deciding upon which protective actions to order was done by a committee venture. All the on-scene experts that have all pertinent information on how to fight the product, how to neutralize it, its dangers, the health dangers associated with the product, and methods required for cleanup get together and have decision making meetings. Members in these groups are hazmat team members, fire departments, EPA, ODH, CDC, Phosphorus teams, etc.

PROTECTIVE ACTIONS AND HAZARDOUS MATERIALS EXPOSURE CONTROL (Cont'd)

(Emergency Workers)

It is a standing order for fire departments and the hazmat teams to wear full protective clothing and breathing apparatus. There are others however, that did not take precautions or listen to the protective guides. For example, there were members of the railroad, O.H. Materials, and other agencies walking around on-site with briefcases and in short sleeve shirts and hard hats.

The chosen protective actions and guidelines for on-scene people came direct from the CP; guidelines for perimeter forces came from the civic center command based on field force reports and reports from the CP.

Question: Do all areas have to obey protective guidelines? Evidently not, when the guide was given to evacuate Moraine, the Mayor there refused to comply. Once the problem crosses jurisdictional boundaries, protective action guidelines (PAG) become mere suggestions to the surrounding areas. Who's liable? Whose responsible for actions? This needs to be legally addressed.

Some protective actions taken to protect workers and limit exposure control were:

1. Rotate on-scene people to eliminate exposure and exhaustion. (A rest and relaxation (RER) area should be set up for workers when they take breaks - no phones or TV's.)
2. Control points, barricades and zones were changed according to the plume tracking system reports and wind shifts.
3. Purchased additional equipment - 60 respirators - for workers that were in close proximity to the site. Not all workers were protected with equipment - both at the CP and in the field such as the police, sheriff, and public workers who were constantly on scene refueling and oiling the trucks whose engines ran continuously. These people were not exposed directly to the product or in the cloud but when wind shifts occurred they were caught sometimes. Enough respirators could not be purchased for all 150 people in the area, some people were just told if cloud comes at you - move. (This could be done because the product was not toxic. If it had been, the entire scene and operations would have been different.)

PROTECTIVE ACTIONS AND HAZARDOUS MATERIAL EXPOSURE CONTROL (Cont'd)

(Emergency Workers)

Suggestion: More briefings for area people are required to keep them fully informed on subjects of protection. What do you do if cloud comes at you? Stay at post or move? Cover your eyes and mouth? Where go to? etc.

Recommendation: It was suggested that respirators be purchased for everyone - police, public works, streets, etc.

Problem: Which kinds do you buy? For only phosphorus or something else or all chemicals - each chemical uses a different respiratory filter.

4. A portable water supply was at the CP - bottled water. Also there was sterile water on scene if needed.
5. Use protective clothing - same problem as in #3 above.
6. Restrict air space. The helicopters were drowning out communications and were also spreading the plume.
7. Have medics on standby and staged by the CP.
8. Have arrangements with air rescue such as care flight.
9. Rotate people, find shaded areas for breaks, feed the people.
10. Check for overexertion of workers and constantly inquire about their physical feelings.
11. Due to the nature of the product, emergency workers could not be monitored as they went into and came out of the operations zone. No medical tests available. Thus constantly checked feelings and behavior. If experienced problems, were pulled out to relax or sent to see the medics. Refer to the medical section on the very small number of related injuries.
12. The CP constantly monitored operations, and the phones. They were the ones who gave the order to pull men back and to where and for how long. If the order was given everyone got out and left the area till safe to return.
13. Decontaminated workers. The hazmat team monitored decon operations and they should have started decon. measures much sooner than they did. There were members walking around contaminated more on Wednesday that were not decontaminated than those on Saturday who were not exposed as much. There were not many decontamination operations that could be done other than removing clothing and segregating it for disposal.

PROTECTION ACTIONS AND HAZARDOUS MATERIAL EXPOSURE CONTROL (Cont'd)

(Emergency Workers)

14. The hazmat team and EPA monitored contamination. There was no real tracking of the product. The only members exposed to the product were those that came in contact with it during initial site inspection, venting operations, cutting operations and checking residue amount - Very few people. These people were decontaminated.
15. There were always fresh backup crews staged and ready in the staging areas.
16. Follow-up medical questionnaires were done by the Miamisburg Fire Department and long term medical checks were done in Ohio Department of Health and Center for Disease Control surveys.

There were no problems getting workers to go into the areas and work - even when not fully protected. No one left their post permanently. Some had symptoms for awhile (a few for 3-4 weeks). All were given pulmonary function test and the city is paying medical bills. So far all symptoms have disappeared. There were some workers who were worried about long term effects and there is a possibility of disability law suits later on. So far there are no suits against the city for asking them to work in the area.

Recommendation: Checklists for all members roles in the area would be helpful in listing actions and protections.

MEDICAL SUPPORT

The medical section will deal with health and medical aspects from several areas: the hospitals, the EMS, the health and medical issues forced during the incident by the emergency workers, the issues dealt with in regards to the populace, and follow-up medical issues such as the long term effect studies and possible workers compensation and other law suits brought to bear.

The medical issue was a problem from the beginning. Due to the railroad not relinquishing the train's manifest and the lack of willingness to cooperate, the medical sector was unsure of what it was dealing with. The medical sector must be trained and prepared for all hazmat problems for just this reason. Not knowing what they were dealing with, the medical sector could not estimate the number of people they would be dealing with. Hospitals will have to be trained and prepared for unknown situations.

The area hospitals and medical facilities have mutual aid agreements between themselves and their laboratories. Fortunately all the hospitals have their own emergency/disaster plans and just prior to the incident the newly revised Mass Casualty Incident Plan had been put into effect so that all area hospitals were working together - they all followed the same procedures so that all new what the other was doing. Mutual aid agreements and plans to tie hospitals together are a must.

All of the hospitals have their own resource lists (their own equipment and personnel) and also resource lists of other available facilities and their phone numbers. All emergency rooms have personnel and resource listings. All departments, as part of their hospital plans, have call up lists of active and backup personnel for response times.

All hospital plans list methods of dealing with patients, reducing patient loads during crisis times and all list procedures on how to interface with the EMS sector.

The ambulances within the area are all listed in plans and they consist of the EMS squads, fire department squads, hospital ambulances, private ambulances, and funeral home vehicles if necessary.

All area hospitals in Montgomery County have the means for decontamination and contamination control, but not all hospitals are fully trained in these areas when related to hazardous materials. There are certain hospitals that are better suited to handle contaminated hazmat patients; in Montgomery County, the Wright Patterson Air Force Base hospital would be best suited for this.

The MVDSA also has complete medical resource listings in their office. The resource list includes hospitals, laboratories, private industries with medical facilities.

MEDICAL SUPPORT (Cont'd)

Training is available for all medical facilities through agencies like the Ohio EPA, SFM, and ODSA. Many industries will also offer training on their products to hospitals and EMS. All hospitals are trained in normal duty operations, but not all have been trained on dealing with hazardous materials, protective measures, decontamination, and contamination control. This applies to EMS units also.

A strong recommendation made by locals was for all hospitals and EMS to receive all such training on dealing with hazardous materials. It was also felt that EMS squads as well as hospitals needed training in protective clothing and self-contained breathing apparatus.

During the incident beginning, the EMS was basically used for evacuation purposes. On the first day, there were 25 medics called out. The EMS was used as part of the door-to-door phase. They also made medic runs whenever necessary. It was a belief of these units that more information (better public information) should be given to the residents when they were told to leave. During the first evacuation, the EMS had trouble with people stopping them from doing their jobs to evacuate specific people; this could not be done as they couldn't stop at every other house - they had to keep going to warn everyone.

Suggestion: Make sure you plan for plenty of manpower to be on hand in cases like this; that way some can stop and the rest keep working. The way it was resolved was to remove the people that definitely had to be moved and then took addresses of all the others. When the units returned to Station 2, they turned in names and addresses and had to assign a vehicle to send out. When vehicles were sent out they were assigned a hospital to go to if need be.

It was difficult for the hospitals due to a lack of information on the product. The EMS squads could call in they had patients but could not tell the hospital what it would be dealing with.

During the second eruption, the EMS and hospitals were more prepared as the experts had given out information to all on the health effects of phosphoric acid and told how to treat the people.

Suggestion: Use EMS squads that are capable of handling the situation at hand.

It is very important to get health effect information to the EMS and hospitals so they can deal with patients and treatments. The health effect information that was finally given to the medical section was based on information received from the Ohio Department of Health, Center for Disease Control, Department of Agriculture, EPA and Hazmat teams, the Phosphorus Emergency Response Team, and Albright and Wilson.

MEDICAL SUPPORT (Cont'd)

As stated earlier, the mass casualty plan was in effect for the hospitals and it worked very well. The hospitals all had a communications plan that worked well until the radio frequencies and telephones were jammed. At this point problems started; EMS coming in could not talk to the hospital and vice versa, hospitals could not talk to each other or any other forces to any extent.

The hospitals had radio problems as did the EMS because of the traffic overload, but also because of the placement of the radios within the hospital itself. Most hospital radios were not in the emergency rooms, they were in a conference room or some similar place with no one there to man them - thus no communications with incoming squads. Corrected by moving their radios to the emergency room where someone could man or cover it 24 hours a day.

Due to the traffic tie ups on the radio and the frequency being jammed, the EMS and hospitals had a difficult time coordinating patient loads. Wasn't so much that EMS didn't call everything that was coming in; it was due to: the squads called in when could and be cleared, but before the squads got to the hospital, a large number of walk-in patients would come in and then the hospitals were overloaded.

It needs to be in the plan to be prepared with enough staff and equipment to handle squad run patients as well as large numbers of walk-in patients.

One large problem for the hospitals was the processing and paper work involved - plan for plenty of staff to cover this area.

The above talked of radios being jammed with calls and the difficulty that ensued. The telephones were totally tied up and nearly useless. This must be planned for - the loss of telephones.

The hospitals communication problems were mostly corrected by moving their radios to the emergency room and also by bringing in and using amateur radio (HAMS) operators as relays.

One extremely important thing that helped the medical sector in Miamisburg was a Medical - EMS Sector Command set up at the command center.

One suggestions made by all fire departments and EMS units was that it is a great need to have a separate EMS frequency. The radio frequency EMS used was the fire mutual aid frequency. With a separate frequency it will facilitate early communications with the hospitals. Another action Miamisburg forces used was to reduce incoming traffic calls to only critical or crucial information calls.

MEDICAL SUPPORT (Cont'd)

Once the communication and coordination problems cleared, the EMS, and hospitals ran very efficiently; and the new plans worked very well. The main job of the hospital was handling patients from squads or off patients the streets.

One problem the hospital was faced with was the constant phone calls from the public. They would ask about evacuation procedures, about their contaminated swimming pools, animals, etc. Many questions could not be answered by hospital members.

Suggestion: A central medical source for callers should have been set up and the phone number advertised.

Also, all of the media stations should be giving the same information out. The local stations were all briefed and used the releases to tell of medical dangers and what to do if ill, etc. Problem was some media gave out information they were briefed on and told people to go to hospital only if experiencing a major problem; but other stations would tell the public to go to the hospital for any symptoms - this caused jams in the hospital and conflicting reactions.

Neither of the hospitals had to evacuate. One was in the path at one point but after receiving the health effects and information on the product, the hospital decided not to move. The hospital had a completely closed system - they closed off all outside air sources and windows and doors and buttoned up using their own air supply system.

Some hospitals statistics:

1. Approximately 500 residents, etc. seeked help due to upper respiratory problems (coughs, hard to breathe) and eye and skin irritations.
2. There were only three related phosphorus accidents - all minor, the worst being a burn on a workers foot - while working around a truck near the creek, his foot slipped into the creek and water with phosphorus got into his boot.
3. There were some minor emergency worker injuries i.e. dirt in the eyes, sprained ankle, scrapes, irritants, respiratory problems, heat exhaustion. These injuries were to ten fire fighters.
4. Plan for one out of every 25 needing to be removed to hospitals.
5. Approximately 120 people were removed to hospitals the first two days - smoke related.
6. Plan for one in every ten people in evacuation centers will need medical attention - saw these figures in almost every center.

MEDICAL SUPPORT (Cont'd)

Statistics (Cont'd)

7. There were no influxes of patients the third day or fourth day. When they were cutting open the tanker, the hospital was notified of a possible influx.

The hospital is slated to receive more training on hazmat, decontamination and contamination control. They are slated to also get decontamination areas, showers, SCBA training, etc.

During and after the second eruption, there were better communications due to the use of amateur radio operations and the above listed actions.

Because of the second eruption, the evacuation was much larger and the EMS squads were used to evacuate the nursing homes. The evacuation of nursing homes will be discussed in the Protective Actions Section on Shelter and Evacuation.

The EMS had to make a lot more medical runs and were tied up more on these than as they were to evacuate during the first night.

By this time EMS was aware of the medical dangers and knew how to treat the patients.

EMS squads were given full health and medical information, maps and locations of shelters. There were over 116 medics from six counties on site.

One very large problem for the EMS was that people would call in false medical information to get themselves picked up or for medical assistance - this tied the squads up tremendously. For example, people would call in a heart attack just to get the squad to their home quickly for an eye irritation. They could not predict calls for medical assistance.

These calls caused a great deal of difficulty. There were so many medical runs waiting to be made, that when a critical call came in, there weren't enough squads to respond to it.

Recommendation: Set up staging areas for squads (as was done in Miamisburg) and stage extra heavy on EMS units to cover such tremendous numbers of runs.

Because there were so many medical runs to be made and the radio being out of service to minor traffic, the EMS squads were told to keep their own medical run records and keep records of their own times. Then toward the end of the incident, they set up transcribers to record everything that went on in the hospitals, EMS, and Command Sector - this should have been done earlier.

MEDICAL SUPPORT (Cont'd)

During the first evacuation, the squads had a large problem trying to get people transported as they had trouble getting through the rush hour and congested traffic due to evacuation. There was trouble getting squads to the fire stations and then to the run locations. Corrected this by having squads run with their lights and sirens to and from the station.

The second evacuation had the traffic going away from the squads and thus the movements were much easier.

During the evacuation of people and in making medical runs there was a great deal of mutual aid called in. Whenever mutual aid forces were called in, always had to make sure that you didn't deplete that jurisdictions forces. For example, at the time the incident was happening the Womens U.S. Open Tennis Tournament was being held. The tournament needed medics also, so Miamisburg had to cover the incident and the tennis matches. The command post staged and pooled all the EMS squads and if one areas forces were pulled to the scene then a replacement unit from staging was sent to cover that squads station in case of calls like the tournament.

Staging areas were a must. EMS squads, school buses and RTA buses were kept in staging to help with the return of evacuees.

Once the incident was over and all had returned home, the follow-ups started. Many people complained of respiratory problems, eye and skin irritations, blisters, etc. so the medical sections checked them all out - according to the ODH and CDC the effects would not last long. Emergency workers in the area of the incident also complained of the same problems. The City Manager ordered all emergency workers to receive pulmonary function tests and he recommended everyone else to receive the tests.

As a follow-up, the CDC and ODH gave out a questionnaire and interviewed all those that had gone to the hospital and the emergency workers on their actions in the cloud, exposure, and the effects they had. This information will be completed to check for long-term effects. These questionnaires showed that the greatest number of people showing signs of respiratory problems were smokers. The tests were hard to discern information from; had trouble telling if respiratory problems because of phosphoric acid or because a smoker - tests show very similar in results.

These two agencies also interviewed the evacuees to compile a report on evacuation, shelters, complaints of evacuees, etc.

The following are further recommendations as to ways things worked in Miamisburg and also recommend planning considerations:

1. EMS squads needs to carry visquene or plastic to cover the inside of the vehicles and beds to keep the vehicle from being contaminated during hazmat runs. They also need SCBA training and to carry SCBAs on units so they can ride in the back of the squad with contaminated patient.

MEDICAL SUPPORT (Cont'd)

2. Need to look at communications plans. Miamisburg is looking at an 800 system for their radios. Instead of the EMS radio nets with 4 set frequencies, they may go to an 800 system with a constantly fluctuating set of frequencies (20 or more). They (EMS - Fire) can control the traffic flow instead of a scanner system. Also they can assign specific frequencies to each sector - one for EMS, one to fire, one to hospitals, etc.
3. Have sterile water at the command post.
4. Have bottled water - for drinking at command post - in case no water system or contaminated water.
5. Keep plenty of medics in standby mode and in staging areas. Have several staging areas to assign from - Miamisburg had three.
6. Plan for health coverage by helicopter - Miamisburg has care flight - standing by.
7. Need to have a system where the hospitals inform the command post or EOC of their status, capacities (how many people they can handle) and abilities (can they handle hazmat patients).
8. Must have physicians or a medical command in the shelters - one in every ten need medical assistance. This was handled by EMS personnel, physicians, Department of Health teams and Red Cross nurses.
9. Sort medic units and assign them to a hospital (randomly chosen) at time of dispatch.
10. Keep hospitals updated at all times.

POST ACCIDENT OPERATIONS (Cont'd)

The actual physical operations were conducted by O.H. Materials at EPA's approval. An area of ground 200' by 75' by 75' had to be dug up for neutralization and disposal. The ground was dug up and put into a large pile (HOT). A blacktop area 100' by 100' was laid out for the spreading of the hot pile. The hot pile was spread out and then tractors raked slowly back and forth through the dirt until neutralized (cold pile). The cold pile was moved off and another hot pile was neutralized. This operation was performed for three months until all ground was neutralized. The ground was then hauled away for disposal. The Miamisburg and EPA monitored the contractors operations at all times. The operations were initially done day and night until the contractors violated EPA's ruling of raking slowly so no smoke was generated to the populace. The contractors did it too fast at night, the fire department received complaints of smoke, and the EPA ruled "no more night operations."

Also done as cleanup was the damming of Bear Creek. The water was filtered and monitored and pumped out, and the entire bottom of the creek exposed to the spill had to be dug up and raked as mentioned above for the ground operations.

Special materials had to be ordered as they were not locally owned or available. The off-loading truck had to be called in, barrels for containment and packing of material (ground) had to be ordered from Monsanto and Kentucky industries. All to be paid for by CSX.

If a spiller would not have been found, the Ohio EPA and U.S. Coast Guard could use the funds under the CERCLA (Superfund) program. According to the U.S. EPA, their on-scene coordinator was authorized to spend \$1 million on the operation.

Ohio EPA supervised the cleanup operation but the City Manager and Miamisburg Fire Chief retained authority clear through to the end of all operations.

Other after accident operations consisted of follow-up reports by agencies such as the National Transportation Safety Board and Federal Railroad Administration to determine the cause of the accident. Reports were done on the fish kill and suits filed against the spiller for payment. The Ohio Department of Health and the Center for Disease Control did follow up medical studies. For a complete listing of agency follow-ups refer to the Contiguous Coordination Section.

The business of law suits is still ongoing. Some people exposed to the cloud (emergency workers) had lingering effects for several weeks. All persons that had long term effects have ceased to have symptoms. The City of Miamisburg took the initiative to pay directly the medical cost for city workers as opposed to turning it over to workers compensation. The City will in turn bill CSX for reimbursement.

POST ACCIDENT OPERATIONS

Post accident operations, naturally, are those performed after the incident is under control such as: cleanup operations, containment and disposal operations, figuring out damages and ascertaining who is liable for reimbursements, follow-up actions such as medical testing and after action reports, ascertaining/investigating causes, seeking assistance, confronting possible law suits, and assessing plans to see if they were plausible or in need of revamping.

The largest post accident operation was the monitoring of the area and cleanup. The cleanup operation was handled by the railroad - hired contractor O.H. Materials. O.H. Materials performed the actual hands on cleanup, containment, and disposal operations. O.H. Materials was hired by the railroad (spiller) and O.H. sub-contracted some cleanup operations to other firms. Plan Bulldozer companies used earlier in the incident for diking and building dams were not used for cleanup operations.

The revised code states that the spiller is legally responsible for the cost of cleanup. CSX will be paying for all bills associated with the entire incident.

The Ohio Environmental Protection Agency was, by law, charged with supervising and overseeing the cleanup - disposal operations. O.H. Materials would do anything the EPA and local administration requested; there was total cooperation among forces. The cleanup and disposal operations were not just cleaning up the spilled material, it entailed totally reclaiming the environment.

The generator of the product can also be liable. Under the Resource Conservation and Recovery Act (RCRA) the generator must have approved contingency plans. Approval is by local fire and police departments, the Ohio EPA, and the generator. Once this plan is agreed to by all, it becomes law and if the generator violates the plan guidelines, it is handled as a breach of law and the EPA can file against them.

The Ohio EPA and U.S. EPA, and Monsanto, monitored the air for particulates to see if the area was free of phosphoric acid. Water samples were taken by Ohio EPA for contamination testing of Bear Creek and the Great Miami River. The Ohio Department of Natural Resources also tested the water for contamination due to a discovered fish kill. The Department of Agriculture put out advisories on crops and live stock to the public. Ground samples were taken by Ohio EPA, Monsanto, the Hazmat Team, the contractors hired by CSX, and the phosphorus team. Constant advisories on all the above were passed on to the public during the incident, while people were returning to their homes, and during the environmental reclamation operation.

POST ACCIDENT OPERATIONS (Cont'd)

There was no baseline medical data on phosphorus effects thus doctors can't say problems due to smoking or phosphorus. The pulmonary function tests are not conclusive proof; thus may get some legal disability claims.

What about Workers Compensation? According to their law the burden of proof is on the employee, but there is no data base. Does the city help the worker or walk out on him after asking him to work in the incident? What legal problems may arise? So far there are no claims against the city.

Some medical claims are being turned over direct to CSX for payment and some are going to Miamisburg to turn in to CSX.

Another possible problem. Businessmen were angry they had to close down and lose money. Will they or can they sue the city because of the evacuation? Can the city turn around and sue CSX for their lawsuits? These legal questions must be researched for this and possible future problems.

The huge job of compiling all related costs and damages must be embarked upon for reimbursement actions against CSX.

And all plans must be reviewed to see if they worked. Did they work? Properly? Efficiently? Do changes need to be made? Do we need a new plan? This is a long job considering all the in-place plans and Standard Operating Procedures that were involved.

Finally, it is a strong recommendation of all local agencies, "keep complete records, without them reconstruction of events is impossible."

Some follow-up projects were the Ohio Hazardous Substance Emergency Team, formed by the Governor was activated to do follow-ups on all areas of the Miamisburg incident. OHSET held public hearings, there have been numerous OHSET and local hearings and critiques and follow-up sessions among responders. There was a media critique of the situation. Numerous videos and films have been produced about the incident. Many talks have been given across the country on how the incident was handled and how other communities can benefit from this experience. A training program of video tapes and student manuals is being produced by the local agencies and news media. Senate hearings have even been held on this topic.

Regional hazmat planning has been brought up and the need for plans and training are being pushed for from all levels of government.

HAZARDOUS MATERIAL EMERGENCY RESPONSE TRAINING

Hazardous materials emergency response training is available from many places. The State Fire Marshal's Office offers hazardous material training, as does the Ohio Environmental Protection Agency. The Federal Emergency Management Agency, U.S. EPA, and the Emmittsburg Training facility offers hazardous material response training. Many private agencies such as railroads, research and laboratory firms and many businesses offer such training, i.e. Monsanto which is in Miamisburg.

The agencies that probably use hazardous material emergency response training the most are the fire departments. They are usually the responding agencies that actually have hands on response functions at the site of an incident.

The fire departments in the Miamisburg area that responded to the train derailment of July 8, 1986 had received training on hazardous materials and also on emergency response procedures.

Training is available to all departments of the area. Most of the responding fire forces - 26 - are members of the Dayton Regional Hazmat Team. All members participate in frequent training. All these departments had been trained in hazmat procedures prior to the derailment. The departments have an extensive ongoing training program on hazmat and fire fighting procedures.

Training was received three weeks prior to the incident on Chessie Railroad tank cars.

In April many received training and took it back to their own departments for further training on tank cars at the Lima, Ohio program put on by the Safety Systems Hazmat Training Group of Florida.

Training has also been received on hazardous materials from the Monsanto Laboratories in Miamisburg.

There is a high degree of training in the Miamisburg fire departments and surrounding areas, according to the Captain of the Miamisburg Fire Department. All departments have had dealings with the regional hazmat team but not every responding fire department at the derailment has been trained in hazmat; especially the more rural, volunteer forces. At the site some of these forces were not trained and had to be "sold" and instructed on what to do.

Miamisburg has developed uniform standards and all mutual forces are trained on these, including the SOOT (Southern Ohio Officers Training) group of fire departments.

All fire departments conduct ongoing internal training programs to keep members up to date on hazards and techniques to fight them.

HAZARDOUS MATERIAL EMERGENCY RESPONSE TRAINING (Cont'd)

Most departments have been trained on the "Incident Command System" (ICS) which is a method of handling a disaster site from chain of command to the sectors to set up and how they should work. The ICS was used very effectively at the Miamisburg scene.

There is the SOOT group and there is also written mutual aid between forces in Montgomery County. The mutual aid and SOOT forces train regularly with the Miamisburg Fire Departments.

There is a great deal of joint training between fire forces (mutual aid, SOOT, Hazmat Team, Monsanto). This reduces arguments between forces at the scene - all know the same information and have been trained on the same techniques. All departments know how each other will operate.

Training is shared between the counties. SOOT meets monthly to train on all new material, information, and techniques. Usually six or seven departments train together at a time.

Area departments also conduct numerous exercises and drills to enhance the training they receive. Miamisburg forces, et al had a mock disaster three weeks prior to the train derailment.

Since the incident, the Miamisburg and outside fire departments have received training on hazmat and disasters from Monsanto.

The Miamisburg and surrounding police departments have not had hazardous materials training - it did not affect their performance - they were not involved in handling or dealing with the hands-on response. The Miamisburg Police Department is attempting to obtain several tapes and training on initial response procedures for their forces.

The police forces do have joint training but not on hazmat or response to hazmat. They have joint training on police procedures and methods.

Hospitals have or can receive training in hazmat and are going to receive such in the near future.

The media - WHIO-TV7 - is going to receive training on hazardous materials and response to them. They have also had training from the Regional Hazmat Team and have received information from CHEMTREC.

HAZARDOUS MATERIAL EMERGENCY RESPONSE TRAINING (Cont'd)

The following are recommendations that work in Miamisburg and will be acquired in the future:

1. The number one priority to handling an incident is, everyone from the Bottom position to top management must participate in officer - staff training.
2. Forces need continuous training in all areas of response.
3. Need continuous emergency response training.
4. Need training on areas such as hazmat not just fire fighting techniques.
5. Fire fighters and other response forces need training in safety and hygiene also. Protect themselves on scene.
6. Need training in the health effects of hazmat and other materials that may be encountered on scene.
7. Need to receive complete training on methods of identification - hazmat. Training should cover markings, placards, manifests, where to find manifests and what they tell you.
8. On the same note, modal carriers need to be trained in manifests; how to fill them out, where to keep them, and who to give to if an accident.
9. There is a need for transportation carriers - drivers - to be fully trained in hazmat and what they are carrying. They should also be trained so as to get a special hazmat drivers license.
10. Fire departments and assisting response forces such as the police, public works, other government agencies, etc. should be trained in the workings of the Incident Command System. Need training on staging areas also.
11. Planning is a must and all responsible agencies must be trained in the contents of the plan. Plans must be exercised frequently.
12. There should be joint training made available between the response forces and the carriers of hazmat.
13. Hospitals and EMS people need to be trained in hazmat.

Hospitals need training in hazardous materials, how to handle hazmat patients, decontamination procedures and contamination control.

HAZARDOUS MATERIAL EMERGENCY RESPONSE TRAINING (Cont'd)

Recommendations (Cont'd)

EMS need all the same training as hospitals and they also need training in protective clothing and use of self-contained breathing apparatus. Possibly get training in Hazmat triage.

14. The media needs to receive training in hazardous materials and its health effects. This will enable the media to assist in good public information and also eliminate media persons getting into the problem itself. Media needs to train with response forces to lay a ground work of cooperation.
15. The media also need to train with other response agencies such as the Red Cross to know what they can or shouldn't do in regards to evacuees or shelters.
16. A recommendation from the City Manager was for officials to receive the response and emergency management training he received at Emmittsburg. He used much of what he learned there at the scene of the Miamisburg problem.

PERIODIC REVIEW AND UPDATE

There were several plans in effect at the time of the Miamisburg incident. There was:

1. The Montgomery/Greene County Emergency Operations Plan.
2. The City of Miamisburg Disaster Plan.
3. The West Carrollton Disaster Plan.
4. The Regional Hazardous Materials Response Plan.
5. The Montgomery County Mass Casualty Incident Plan.
6. The Miamisburg Fire Department Disaster Plan.

The West Carrollton Plan has just been updated. The Regional Hazardous Materials Response Plan is constantly under update due to its nature and it encompasses 26 fire departments. The Montgomery County Mass Casualty Incident Plan was just completely updated one or two months before the incident occurred. The Miamisburg Fire Department Disaster Plan had just been revised and updated one month before the occurrence. The City of Miamisburg Disaster Plan was last updated in 1983 and is now under total update at the present time. Also the Miamisburg Police Department said an Evacuation Plan for Miamisburg will be developed shortly. The Montgomery/Greene County Emergency Operations Plan is going to be totally revised and updated and written according to the new guidance documents from the Federal Emergency Management Agency. The Montgomery/Greene County Emergency Operations Plan will be written and produced by the Miami Valley Disaster Services Agency.

The MVDSA is also going to write a Hazardous Materials Plan for Montgomery/Greene Counties. The Miamisburg Fire Chief asked about a possible Regional Hazardous Materials Plan - this may come to be in the future.

All plans listed above are updated by the local jurisdictions (#2, 3, 4, 6). The Mass Casualty Plan is at present time an up to date document and will be updated as necessary through the MVDSA in cooperation with all responding hospitals and EMS squads.

The Montgomery County/Greene County Emergency Operations Procedure will be the responsibility of the MVDSA. All agencies listed within the plan will be included in the planning process to establish authorities and roles and responsibilities. Out of the Miamisburg incident came new planning concepts i.e. the Red Cross, Humane Society, Animal Shelter, and Media will be brought into the planning concept.

PERIODIC REVIEW AND UPDATE (Cont'd)

The planning will be done by MVDSA on an agency basis. Once all areas are ironed out with each agency, representatives for all agencies will meet with MVDSA to iron out an overall plan that tells who's in charge, responsible for what, what actions will take place during an incident, etc.

Once this plan is written, all agencies will concur with its content and the plan will than be signed off on by the legally appointed officials and put into effect.

Review and updating of information within the plan will be the responsibility of the agencies listed within each section. For example, reviews and any updates to the fire annex will be the responsibility of the fire departments listed in the plan and so on for all other sections. General sections will be the responsibility of the MVDSA.

As updates, changes, or corrections are brought forth, they will be sent to the MVDSA for reprinting. Once updated the section will be current once again and distributed to all plan holders.

This plan will be reviewed and updated every two years or sooner if corrections or policy changes are made by the agencies of each annex.

The plan will be exercised and tested yearly or according to the FEMA guidelines.

The Hazardous Materials Plan that MVDSA is preparing will be handled in the same manner as listed above for the County EOP.

LEGAL RECOMMENDATIONS

This is not a function of a plan as listed in the Ohio Hazardous Materials Guidance document. This section is just a further compilation of legal recommendations as voiced by the Miamisburg interviewees. These recommendations are in addition to all other comments and views as stated previously in this report.

There is no order to these recommendations, they are written down as they were voiced:

1. Control of the situation needs to be retained by the local entity.
2. Establish legal agreements as needed in all 14 of the previously functions.
3. A generalized form of right-to-know legislation would be helpful to the jurisdiction - general notification - of overall carryings - not each shipment.
4. Law needs to specify authority of each agency; who's in charge; who calls for what functions in a crisis - everyone's roles; what legal rights do locals have once declared a State of Emergency.
5. Must document all conversations and decisions, keep good notes for legal protection.
6. Before giving press releases, check for its legality.
7. Consolidate Federal programs; theres to much overlapping of Federal agencies which causes much conflict and overlapping of Federal regulations. Regs need to be coordinated - extremely confusing and which one do you follow? The one you like?
8. Consolidate the multitude of hazardous materials lists into one list.
9. Set stricter container standards - for all types of containers. Replace design specifications with performance specifications.
10. Collect data on hazmat quantities and routings and distribute the findings.
11. Set route selection standards for hazmat - locals should have a voice, i.e. the time of day, escorts, bans.
12. Minimize the number of shipments.
13. Notify locals along routes of extremely hazardous shipments; minor ones should be reported in yearly documents.
14. Develop one expert central emergency response authority made up of local, state, and federal people.

LEGAL RECOMMENDATIONS (Cont'd)

15. Explain in laymens language the federal rules and regulations listed in 49 CFR, et al.
16. Provide planning guidelines for response to hazmat.
17. Increase hazmat training and education - federally fund it.
18. Increase federal enforcement on container specs., labeling, placards, classifications, speed - States and locals should have a voice in standards for all the above.
19. Set up a highway trust fund (National). Funds to be used for all carriers should pay into this fund also. Delegate the funds based on the amount of hazmat that goes through each jurisdiction. Locals must conform to setting up emergency response plans, designate a lead agency for emergency response, etc. If this fund is in effect, locals can't issue their own tax on top of this one unless their are provable special needs.
20. Set minimum insurance regulations for carriers and shippers.
21. Require a national hazmat drivers license.
22. Revive and enforce the Hazardous Materials Transportation Act.
23. Federal efforts are inadequate to enforce safe transportation of hazmat - review laws.
24. Impose a payment on hazmat shipments to be paid by carriers.
25. Review, update, and enforce current hazmat laws such as placements of tank cars in a train consist.
26. Issue grants for hazmat planning, inspections, audits, training through the HMTA.
27. Put a law on the books that allow jurisdictions to force people to evacuate and stay away. Authorize arrest powers and forced evacuations.
28. Need state level notifications of hazmat by truck and rail just as get for high level radioactive shipments.
29. Clarify jurisdictional authorities - who's in charge, when, where, how put into effect, can one jurisdiction order another?
30. Sulphur car was not a regulated car. Why not? Review the current regulations.

LEGAL RECOMMENDATIONS (Cont'd)

31. Color code tank cars.
32. Reevaluate speed limits.
33. Put spacers in railroad tracks.
34. Enhance EPA's Chemical Emergency Preparedness Plan Program.
35. Establish financial aid for hazmat planning and training.
36. Financially back the HMPP section of Ohio DSA.
37. Need to fund regional hazmat teams.
38. Increase inspections.
39. Revamp the Federal - State relationships on hazmat rules and regulations and enforcement procedures. State sayings are always over-ruled by Federal Regs. but the State has to enforce them. Why? State should have voice in all areas of hazmat; specifications, rules and regulations; enforcement; fines.
40. Write manifests in laymens language. Train carriers where to keep them and what to do with them if in an accident. Print some response techniques for the hazmat listed on the manifest.
41. In Miamisburg there is no disaster aid available as there is for natural disasters. Why not? Only possible aid is through state and local controlling boards. State and locals don't generate this stuff - they shouldn't pay for it - set up disaster relief for hazmat accidents.
42. Spiller must be liable for all related costs i.e., the locals salaries, equipment, and supplies as well as cleanup and law suits.
43. Clarify the legal issues for employee complaints of inquiry or illness; - workers compensation - burden of proof on employee to prove, but how can local jurisdiction not pay for aid after they ask employee to enter area in the first place. Specify legal responsibilities on local jurisdiction and spiller in law suits and subsequent claims against the local jurisdiction.
44. Clarify legal responsibilities of local officials. Do all local officials have to be in on decision - making. Do policy-makers have to approve of all administrative decisions. Who's in charge of situation? Is it against the law to not include all jurisdictional members in decision making? Can meet without press?

LEGAL RECOMMENDATIONS (Cont'd)

45. Pass an emergency ordinance to be activated in crisis that answers all questions of authority, funds, evacuation questions, contracts, etc. to go into effect without approval - prior approval as law.
46. Before a crisis hits, check for your agencies and governments legal liabilities in case of law suit. Spell these requirements out in laymens terms in the laws.
47. What about law suits against the local government for calling evacuation? Can local government be sued? If can and court rules against local government, can local government sue spiller? Specify all legal answers in law books - laymens language.

The Ohio Hazardous Substance Emergency Team has prepared a document on its findings. In it are sections on State and Federal recommendations.

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