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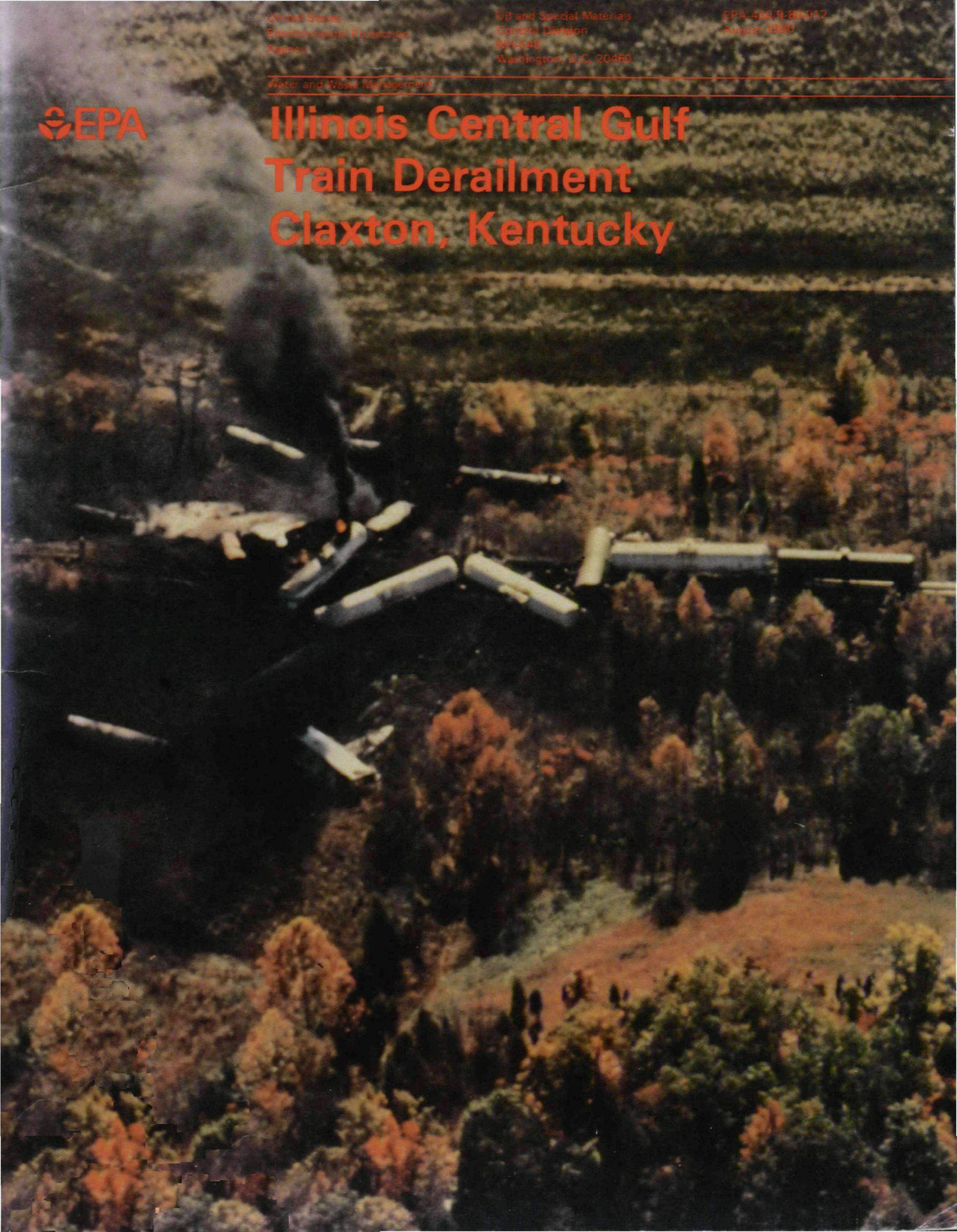
Illinois Central Gulf Train Derailment Claxton, Kentucky



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ILLINOIS CENTRAL GULF TRAIN DERAILMENT

CLAXTON, KENTUCKY

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PREFACE

This report reflects the activities of the Environmental Emergency Branch (EEB) Region IV, EPA, as it was concerned with the captioned event. The report outlines the key actions of the Federal On-Scene Coordinator, the Regional Response Team (RRT), the state, local, and Federal members of the RRT. It reflects the complexity of responding to environmental emergencies and the need to coordinate and plan in advance for a major incident such as this event.

This report is intended to satisfy the requirements of the National Oil and Hazardous Substances Pollution Contingency Plan and to help others learn from our experiences.

Al J. Smith

Al J. Smith, Chief

Environmental Emergency Branch

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1. SUMMARY

Eighteen railroad tank cars containing vinyl chloride, hydrofluoric acid, ethyl acrylate, sodium chlorate, chlorine, caustic potash, and butadiene were derailed near Claxton, Kentucky. Caustic potash, ethyl acrylate, and vinyl chloride were discharged from the ruptured tank cars onto the ground about a quarter of a mile from Montgomery Creek. The creek was dry at the time of the derailment. A hopper car of sodium chlorate overturned and mixed with the spilled ethyl acrylate. The reaction between the two chemicals created a fire and polymerized some of the ethyl acrylate.

The primary problem associated with this derailment was the burning of two vinyl chloride tank cars. One of the vinyl chloride cars flared from a large rupture at one end of the tank car, the other in the vicinity of the dome.

None of the other tank cars was leaking. However, the potential for damaging these tank cars in the removal operation, thereby creating serious environmental problems, existed for seven days.

Meanwhile, the vinyl chloride tank cars were burning and would have done so for several more days. It was decided to accelerate the burning of the vinyl chloride by cutting holes in the tank cars with plastic explosives.

Air Quality Problems

During the combustion phase of vinyl chloride, it is possible that hydrochloric acid, phosgene, and carbon monoxide can be released. All of these products are highly toxic when released to the atmosphere. Also, vinyl chloride is very reactive or explosive at high temperatures or pressure.

Thus, it was imperative for the vinyl chloride tank cars to continue burning. No effort was made to use dry chemicals and carbon dioxide to extinguish the fire. By putting the fire out, an explosive condition could develop and endanger the integrity of the other tank cars.

EPA and the Kentucky Department of Natural Resources and Environmental Protection set up air surveillance crews to monitor for toxic chemicals on a 24-hour basis. These crews responded to all complaints from residents in the surrounding area. In addition, air sampling was conducted on a routine basis.

Vinyl chloride was detected in the air on several occasions near the burning tank cars. An acid mist formed during rainy periods and settled in the valley near the wreck site. The acid mist irritated the skin and made it difficult to breathe. Work was halted during these periods.

Air samples were collected and tested for phosgene. However, it was not possible to detect phosgene in the atmosphere while the vinyl chloride tank cars were burning.

Venting of the Burning Vinyl Chloride Tank Cars

For seven days, the ruptured vinyl chloride tanks burned while the other derailed tank cars were removed. One of the vinyl chloride cars developed a frost line. It was estimated that 25% of the vinyl chloride remained in this tank car. The other tank car contained about 70% of its volume. The capacity of each tank car was 20,000 gallons.

A decision had to be made whether to let the vinyl chloride burn out or vent the tank cars with plastic explosives and accelerate the burning process. By letting the tank cars burn out on their own, people would have to remain evacuated from their homes for a long period of time. In addition, Illinois Central Gulf continued rail traffic through the area. Thus, the potential for another incident existed while the tank cars were burning adjacent to the tracks.

It was decided to vent the tanks and assume a short-term risk of polluting the atmosphere, rather than risk another explosive-type incident. An Army Explosive Ordnance Disposal (EOD) team was brought in by the On-Scene Coordinator to implement a plan for cutting two holes in each tank car, using plastic explosives. This allowed the vinyl chloride to flow out of the tank cars into a large diked area. The vinyl chloride was then ignited by means of an incendiary device.

The charges were set by the EOD team on both tank cars so they could be vented at the same time. However, the plastic explosives did not cut through the egress hole on one of the tank cars. Another plastic charge had to be set to puncture the tank car.

Once the tank cars were punctured, the vinyl chloride burned for about one hour. This created a huge, black plume that was monitored by EPA air personnel. It was raining at the time. The mixing of the rain with the gases released from the burning of the vinyl chloride created an acid mist. EPA advised the residents, through the Kentucky State Police, to remain in their homes and out of the acid mist.

Analyses of Water and Soil Samples

Soil samples were collected by the Kentucky Department of Natural Resources and Environmental Protection in the area where ethyl acrylate, caustic potash, sodium chlorate, and vinyl chloride were discharged. In addition, surface waters, wells, and cisterns were sampled. Toxic chemicals were not detected in these samples.

Montgomery Creek was dry at the time of this incident. However, there was concern that, after a rain, the chemicals could enter the creek via runoff. A retaining structure was constructed to prevent this occurrence.

In conclusion, this operation was conducted in accordance with the Regional Contingency Plan; the plan worked and the operation was a complete success.

2. THE SITUATION

At 11:50 p.m., on October 17, 1978, a dispatcher for Illinois Central Gulf Railroad (ICG), reported, via the National Response center, a train derailment near Claxton, Kentucky. The initial report indicated that five tank cars containing sodium chlorate, vinyl chloride, and hydrofluoric acid were derailed. One of the tank cars was burning and some of the nearby residents were evacuated.

EPA official Fred Stroud forwarded the information to Jack Stonebraker, also of EPA, who would become the On-Scene Coordinator (OSC) for this spill event. Arrangements were made for the OSC and Jim Littell of EPA's Air Emergency Branch to take the earliest possible flight to Nashville, Tennessee, in order to respond to this incident.

During the early morning hours of October 18, EPA continued to receive updates on the number of tank cars derailed and their contents. Some of the derailed cars contained chlorine, ethyl acrylate, and caustic potash. The nearest stream was approximately one-half mile from the wreck site. In addition, two tank cars of vinyl chloride were burning.

EPA requested assistance from the Gulf Strike Team (GST) and the Public Information Assistance Team (PIAT). The Gulf Strike Team was to bring personnel safety equipment and a mobile command post. Both teams would arrive on-scene later in the day to assist the OSC.

Response and Observations: Chronological Events

October 18, 1978

Jim Littell and the OSC arrived on-scene at 11:30 a.m., met with the Kentucky State Highway Patrol and Edward Clark of the State Fire Marshall's office and obtained the following information:

Eighteen cars were involved in derailment.

Tank cars containing ethyl acrylate, caustic potash, and vinyl chloride and a hopper car of sodium carbonate had been ruptured and material discharged on the ground.

The other tank cars containing butadiene, hydrofluoric acid, and chlorine apparently were not leaking.

144 houses were evacuated in a two and one-half mile radius of the wreck site.

Two tank cars of vinyl chloride were still burning.

The OSC met George Bradel and Don Hayes of the Kentucky Department of Natural Resources and Environmental Protection (KDNREP). They had just returned from inspecting Montgomery Creek for possible environmental damage due to the chemical substances discharged from the ruptured tank cars. However, Mr. Bradel reported that the creek was dry. There wasn't any evidence of chemical substances in the streambed. If it rained, there was a possibility that some of the chemicals could enter the stream via runoff from the wreck site.

This information was forwarded to the EPA regional office. Joe Lafornara of the Emergency Response Team (ERT) was enroute to observe the operation.

Ben Eason and Richard Griggs of the PIAT arrived on-scene. The OSC discussed the situation with them and made plans for responding to questions from the media and the public. This part of the operation would begin on the following day.

Early in the evening, Jim Littell and the OSC noticed an inversion taking place in the low areas around the wreck site. The thermal inversion caused the plume from the burning vinyl chloride to stay close to the ground. There was a distinct odor in the air. The

air was tested at several locations outside the evacuated zone for vinyl chloride and hydrochloric acid. All of the instrument readings were negative for these two chemicals.

October 19, 1978

The mobile command post arrived on-scene at 12:03 a.m. The State Highway Patrol called South Central Bell to have telephones installed in the command post.

1:00 a.m. - Bob Tittle of the State Fire Marshall's office reported that the plume from the burning vinyl chloride cars was much larger than it had been in the afternoon. He requested that EPA monitor for toxic chemicals downwind. Jim Littell and the OSC took readings for the two parameters mentioned above at several locations around the wreck site and in Dawson Springs, Kentucky, six miles away. The instruments did not detect any hydrochloric acid or vinyl chloride.

2:47 a.m. - From the command post, a flare-up at the wreck site area was noticed. The flames illuminated the sky and burned for about 45 minutes. There was speculation as to what caused the flare; some throught the tank car fractured or exploded, while others thought the safety valves released vapors that were ignited.

3:00 a.m. - While the tank cars were burning at an accelerated pace, air samples were taken downwind at several locations. Although the odor in the air was unpleasant, no toxic chemicals were detected.

7:10 a.m. - The State Fire Marshall reported toxic fumes along Highway 672 and requested Disaster Emergency Services (DES) to evacuate this area. The air in the area was monitored but no harmful chemicals were detected. The air was very noxious and the inversion kept smoke close to the ground.

8:20 a.m. - The OSC took an overflight in a helicopter. There was a tank car of chlorine lying on a burning coal car. The tank car of butadiene appeared to be upright and on rails. The ethyl acrylate

was discharged on the north side of the tracks, had run down the ballast, and mixed with sodium chlorate. Apparently, this mixture caused a violent exothermic reaction, sending up a huge fire ball. One of the vinyl chloride cars was burning from a rupture at one end of the tank car. The other vinyl chloride car was burning at the dome.

8:40 a.m. - The OSC held a meeting in the command post to discuss the situation and review future plans. Agencies represented were as follows: EPA, GST, State Fire Marshall Office, State Highway Patrol, DES, Hulcher Emergency Service, Illinois Central Gulf, and Kentucky Department of Natural Resources and Environmental Protection.

The representative from Illinois Central Gulf provided a complete list of derailed cars and their contents; six vinyl chloride cars, one sodium chlorate car, one liquid caustic potash car, three chlorine cars, two cars containing hydrofluoric acid, two ethyl acrylate cars, one butadiene car, and two coal cars. Plans were to maintain a status quo since conditions were basically stable. No attempt was made to put out the fires from the vinyl chloride cars because extinguishing them would create an explosive condition.

The question was, how long would the vinyl chloride burn? Estimates ranged from one-to-several days. It was decided that Art Profrock of Hulcher and a representative from the State Fire Marshall's office would take a closer look at the burning cars. Self-contained breathing apparatus would be utilized in the investigation.

9:30 a.m. - The news media arrived at the command post and asked for information about the other two tanks that had exploded. The OSC asked them where they got their information. Their reply was that DES had dispatched a news release from Frankfort, Kentucky. It was explained that the same two vinyl tank cars were burning and no other cars had exploded. Evidently, the flare-up that occurred in the early morning hours had been construed as an explosion of other tank cars.

10:15 a.m. - The OSC talked to Debbie Hockensmith of the KDNREP about setting up a sampling program for wells, surface water, and soil. It was necessary to determine how far the spilled material had

penetrated the soil and the direction of the migration. There was also a possibility of contamination of cisterns and ponds from the plume. Disposal sites were needed for the contaminated soil.

11:00 a.m. - Mr. Profrock returned from inspecting the vinyl chloride tank cars. He reported that a frost line had formed on one of the tank cars. His estimate of the volume of vinyl chloride remaining was 20%, or 4,000 gallons. A frost line had not appeared on the other tank car. Perhaps 75-80% of the liquid remained in the tank car, or about 15,000 gallons.

12:30 p.m. to 3:00 p.m. - During this time period, Debbie Hockensmith and the OSC conducted joint interviews with the news media. They wanted to know what had transpired and EPA's plans for monitoring the air and collecting water samples.

The news media were interviewing nearly every agency present. It was obvious that a lot of misinformation had been given to the media. Ben Eason suggested that a news conference be held on October 20, 1978. This would give the media an opportunity to ask questions of a representative from DES, the State Fire Marshall's office, EPA, Illinois Central Gulf Railroad, and the State Highway Patrol. The OSC agreed, and the PIAT made plans for a news conference at 9:30 a.m. on October 20, 1978.

Later, Ben Eason informed the OSC that DES was the coordinator for the state agencies, and all news releases had to come from their office in Frankfort, Kentucky. Experience with this type of procedure demonstrates that it doesn't work. Procedures for responding to questions from the news media by the Federal OSC are clearly outlined in the National Contingency Plan. Plans for the news conference proceeded, regardless of whether DES and the other state agencies participated.

3:30 p.m. - Mr. Randolph Jensen, Engineer for Rohm and Haas, visited the command post. Rohm and Haas was the shipper for the two ethyl acrylate tank cars. Mr. Jenson was helpful in the discussion of the properties of ethyl acrylate. In his opinion, the mixing of the strong oxidizer sodium chlorate with the ethyl acrylate started a fire. The burning of the ethyl acrylate or exposure to heat sponsored polymerization to a noxious resin.

The safety engineer for Illinois Central Gulf came into the command post looking for Mr. Jensen. He wanted Mr. Jensen to locate a clean tank car for the transfer of ethyl acrylate remaining in the ruptured car. The ruptured car was located across the track upwind from the burning vinyl chloride cars. It was possible that the ethyl acrylate could be safely removed by a pumping operation.

Mr. Jensen said that the clean cars were located on the east side of the wreck site. The damaged tank car was on the west side. The OSC suggested that they get some tank trucks and load them on flat cars. It was estimated that 10,000-12,000 gallons of ethyl acrylate remained in the tank car. Therefore, only two tank trucks would be required. Mr. Jensen said that tank trucks could be on-scene the next day.

Approximately 250 feet of hose and a diaphragm pump, which could be run off the train engine, were needed. Arrangements were made by Mr. Jensen to begin the pumping operation on October 20, 1978.

5:00 p.m. to Midnight - Air monitoring teams were set up to respond to any complaints. During this time period, several complaints came in about fumes in certain downwind areas. The instruments were unable to detect any harmful chemicals.

October 20, 1978

Midnight to 7:00 a.m. - Air complaints were responded to, and the air was monitored on a routine basis. Most of the complaints of a bad odor came from the citizens in Dawson Springs, Kentucky, about six miles from the wreck site.

The OSC talked to the chief of police of Dawson Springs. He indicated that the people really didn't know what was involved in the train derailment. Most of them wanted to evacuate their homes, especially when they could smell the fumes in the air.

The air was sampled at several locations in Dawson Springs, but no harmful chemicals were detected.

9:00 a.m. - Four television stations and several newspaper reporters were present for the news conference. Representatives from DES, the State Fire Marshall's office, Illinois Central Gulf Railroad, Hulcher Emergency Service, KDNREP, and EPA participated in the conference. It went well, and afterward, the news media were allowed to go on-scene to take pictures of the derailment.

11:00 a.m. - An air monitoring crew consisting of Jim Littell and two members of the Gulf Strike Team went on-site. There were some firemen on-site putting water on a chlorine tank car, which was lying on a burning coal car. Mr. Littell took an air reading for vinyl chloride and detected about 50 ppm in the smoke. After receiving this information, the firemen and Hulcher's personnel immediately departed from the area.

2:00 p.m. - The removal operation of the ethyl acrylate from the damaged tank car to tank trucks on flat cars began at this time. Two Gulf Strike Team members monitored the transfer operation. The operation was completed at 6:00 p.m.

3:00 p.m. - Ben Eason made arrangements with the mayor of Dawson Springs for the town meeting. The high school gymnasium was reserved for 7:00 p.m. Mr. Eason traveled to Dawson Springs to assist in publicizing the meeting. All participants were notified.

7:30 p.m. - 50-100 people attended the town meeting in Dawson Springs, Kentucky. Members of the panel were as follows:

Jack Stonebraker, EPA OSC
Jim Littell, EPA
Derris Kirkman, State Highway Patrol
Debbie Hockensmith, KDNREP
Rod Raby, Deputy State Fire Marshall
Ed Clark, State Fire Marshall's Office
Jim Walker, Governor's Aide
Mark Holcomb, State Fire Marshall's Office
Mayor Dickson, Dawson Springs, KY
Jannis Rice, Chief of Police, Dawson Springs, KY

The people asked questions about the environmental problems associated with the spill incident.

The director of a nursing home was present at the meeting. She expressed a deep concern for the patients and whether or not they should be evacuated. Mr. Raby stated that the city had a contingency plan for evacuation. If something happened, the plan would be implemented immediately. The people of Dawson Springs would have adequate time for evacuation.

The meeting was very successful. There were no air complaints during the rest of the night. However, the air was still being monitored on a routine basis. Sample tests revealed no detectable levels of harmful chemicals.

October 21, 1978

6:00 a.m. - Hulcher's equipment for re-railing the tank cars began to arrive on-scene. They were unable to work in the area because of the thermal inversion in the valley. Jim Littell and an air monitoring team checked the area for vinyl chloride, hydrochloric acid, phosgene, and chlorine. No harmful chemicals were detected. Work could not begin until the thermal inversion lifted.

9:00 a.m. - A meeting was held at the command post with the OSC, the Kentucky State Fire Marshall, KDNREP, the Department of Transportation, and Illinois Central Gulf. Plans for this day were as follows:

Remove chlorine and caustic potash cars.

EPA & KDNREP would collect soil samples and water samples (both well and surface waters).

Area would be cleared of all personnel except Hulcher's work crew and State Fire Marshall.

Hulcher would provide safety equipment for their personnel and a decontamination station.

10:00 a.m. - Soil samples were collected from several areas where spillage had occurred. Duplicate samples were taken, one to be analyzed by the EPA laboratory, the other by state laboratories.

Another sampling crew collected samples from wells, cisterns, and surface waters.

Noon to 6:30 p.m. - The caustic potash and two chlorine cars were removed and put on trucks. The vinyl chloride and undamaged ethyl acrylate cars were moved down the slope toward the tracks on the east side. All of the tank cars were checked for leaks by Gulf Strike Team personnel.

We received a report that the health care center in Dawson Springs, Kentucky. was being evacuated. We checked with the chief of police and the Health Care Center and found they were evacuating only those patients with serious health problems. The state police, State Fire Marshall, and the OSC all agreed that this was not necessary.

7:00 p.m. - During the day, several inquiries were received from people who had been evacuated from their homes. They were concerned about damage to crops and livestock.

Mr. H.W. Dorough, toxicologist for the University of Kentucky, visited the command post to obtain information about the chemicals. Mr. Dorough received available information from the Chemical Hazards Response Information System (CHRIS) and Technical Assistance Data System (TADS) files. He would evaluate the situation and release a report through one of the state agencies.

October 22, 1978

6:00 a.m. to 6:00 p.m. - The coal cars, chlorine car, butadiene car, and one of the hydrofluoric acid cars were moved and re-railed. The hydrofluoric acid car was not put on trucks. Ramps were prepared to move the burning vinyl chloride cars down the slopes on the north and south sides of the tracks.

A representative from Penn Walt Chemical Company talked to the OSC about the spilled sodium chlorate. He said that sodium chlorate, a strong oxidizer, is used as a herbicide; if mixed with any organic material, it would ignite. He was concerned about Hulcher's personnel smoking in the area. Also, sodium chlorate is very soluble in water. Therefore, any water applied in the area would allow the sodium chlorate to migrate through the culvert under the tracks. The culvert was blocked on the south side of the tracks but open on the north side. Unless the culvert were blocked on both sides, the sodium chlorate could run off into the culvert and be trapped under tracks.

After receiving this information, no smoking was allowed in the area, and the culvert was blocked on both sides.

Debbie Hockensmith and the OSC were concerned about the spilled material entering Montgomery Creek via runoff from the wreck site. This could be controlled by sumps, trenches, or a retaining structure. Hulcher's crew agreed to construct a retaining dike to control the runoff. The structure was completed at 6:30 p.m.

8:00 p.m. - There was a report that a resident of Dawson Road had been overcome by toxic fumes. Joe Lafornara and a trooper for the State Highway Patrol responded to the complaint. They found that it was a prank call.

October 23, 1978

7:30 a.m. - The OSC called Al Smith, Chief of the Environmental Emergency Branch, EPA, Region IV. Mr. Smith was informed that the two vinyl chloride cars were still burning and probably would burn for several days. He suggested that holes be cut in the tanks using plastic explosives, and that the vinyl chloride be ignited in a controlled area.

The OSC talked to Rod Raby about Mr. Smith's proposal. The State Fire Marshall's office was considering this possibility. Some time ago, they had used an Army EOD team to cut holes in a butadiene tank car near Louisville, Kentucky.

10:00 a.m. - Mr. Raby said that his office was having trouble getting an Army EOD team. He stated that it could take four-to-five days for his agency to get a team on-scene. He asked if the OSC could speed up the process and get an EOD team out of Fort Campbell, Kentucky. Mr. Raby was told that the OSC would have to make a request to the Chairman of the National Response Team (NRT), Mr. Ken Biglane.

10:20 a.m. - The OSC called Ken Biglane, EPA Headquarters, Washington, DC, and requested an Army EOD team. Plans were to cut two holes in the tank car that was burning at the dome, and a single hole in the other burning tank car. This would allow the liquid vinyl chloride to drain out into a large diked area for re-ignition. Mr. Biglane said that he would make the request through the EOD representative on the NRT, Col. Sadler.

The removal of the remaining derailed tank cars continued. The two tank cars of hydrofluoric acid would be the last cars to be put on the trucks.

2:50 p.m. - Col. Sadler informed the OSC that he could set up direct liaison with the 17th Explosive Ordnance Detachment at Fort Campbell, Kentucky.

3:10 p.m. - The OSC contacted Sergeant Hobbs of the EOD and explained what needed to be done. The EOD team would arrive at the command post at 6:00 p.m.

4:00 p.m. - A light rain had been falling most of the day and a white cloud began to settle in the valley around the wreck site. Jim Littell and the OSC took the air monitoring equipment to the site. The rain mixing with the gases from the burning vinyl chloride cars formed an acid mist. This was very irritating to the nasal passages, which made it difficult to breathe and unpleasant to work.

Hulcher's crew stopped the removal operation for the day.

6:00 p.m. - The EOD team arrived on-scene, met with the OSC and the State Fire Marshall, and was given an explanation of what needed to be done. They had worked with vinyl chloride before, but not burning tank cars. They were confident, however, that the job could be done. It was further explained that the holes would not be cut in the burning tank car until all of the other tank cars were removed from the area.

On the following day, the EOD team would conduct a practice shot on a piece of scrap metal in an isolated area.

7:30 p.m. - Ben Eason and the OSC had a conversation with Rod Raby, Ed Clark, and Bob Tittle. Mr. Raby said that he was envious of EPA operations because of the command post, the public information group, and the response of the news media. He claimed that the State Fire Marshall's office did not have any money or equipment. They had to borrow all of their equipment.

The OSC asked Mr. Raby what assistance he needed. He wanted publicity in the news media to get recognition for his program. The OSC told him that Mr. Eason could set up a news conference so that the State Fire Marshall's office could explain the procedure for cutting the holes in the burning tanks. Perhaps they could arrange for the news media to get pictures and film of the detonation of the burning vinyl chloride tank cars.

It was the OSC's understanding that the State Fire Marshall's office had to coordinate this type of activity through the DES coordinator. Mr. Raby indicated that he didn't want to comply with the state contingency plan, primarily because DES had to make news releases from the Frankfort office. He said it was a poor system.

Mr. Eason made several calls to the news media and arranged a news conference for the State Fire Marshall's office for 11:00 a.m. on October 24, 1978.

October 24, 1978

8:00 a.m. - The EOD team arrived and requested the OSC to sign three civil release forms. They proceeded to the wreck site for the practice shot. Hulcher's crew continued to re-rail the damaged tank cars.

11:30 a.m. - The news conference was conducted by Rod Raby. EPA did not participate.

1:30 p.m. - The practice shot on a piece of scrap metal was conducted. It was a complete success.

2:00 p.m. - David Hill, EPA, arrived at the command post to take soil and water samples back to EPA's laboratory in Athens, Georgia.

5:00 p.m. - Major Salter of the EOD team arrived at the command post. He stated, in the presence of Rod Raby, that his instructions from Col. Sadler were to coordinate all of the team's activities through the On-Scene Coordinator. He wanted to explain a proposed plan for the detonation of the tank car to both the OSC and the State Fire Marshall. The plan was as follows:

> Set charges in both tank cars and let vinyl chloride run into the contained area and ignite.
>
> Obtain self-contained breathing apparatus, protective clothing, and backup unit.
>
> Obtain background data on air, water, and soil just prior to detonation.

The OSC told Major Salter that the personnel safety equipment was available, and that soil and water samples had been collected for analysis. The air would be monitored just prior to the detonation by Jim Littell and state personnel.

Mr. Raby was under the impression that Hulcher would have all of the damaged tank cars out of the area by 6:00 p.m. He wanted to set the charges on one of the tank cars that evening. However, Jim Littell advised the OSC and Mr. Raby that a thermal inversion would occur that evening. He advised not to detonate the tank car that evening because the inversion would keep the gases close to the ground. This could cause some air problems in the area of Dawson Springs, Kentucky.

The OSC told Mr. Raby that Mr. Littell's advice had to be considered. The OSC agreed that the tank cars had to be detonated and

he would accept a short-term risk with air problems versus a long-term risk of letting tank cars burn out. However, if the conditions would be better at a later time then perhaps a waiting period was in order.

Mr. Raby received word from Mr. Hogan that the tank car of hydrofluoric acid and sodium chlorate wouldn't be moved until 11:00 a.m. the next day. Thus, the decision was made. The tank cars would not be detonated until all of the other tank cars had been removed.

October 25, 1978

8:00 a.m. - Mike Donohoe, Jim Littell, and Kenneth Yates were stopped at the check point by the State Highway Police. They were not allowed on-scene under orders from the State Fire Marshall.

9:50 a.m. - Ben Eason informed the OSC that state personnel were concerned about questions from Frankfort, Kentucky, regarding the treatment of the state in the press.

10:00 a.m. - Mr. Raby wanted the EOD team to go directly to the wreck site as soon as it arrived. The OSC wanted to talk to Major Salter before he went on-scene about his plans and signing civil release forms.

When the EOD team arrived, Major Salter and the OSC reviewed the plan for detonation. The OSC also told him that there were some problems with the State Fire Marshall, the reasons for which were unknown. However, the OSC assured Major Salter that he would support his plan in any way possible.

10:20 a.m. - The EOD Team, Jim Paskewich, and the OSC went to the wreck site and met with Rod Raby.

Once again, Major Salter reviewed his plan. Mr. Raby agreed to the plan, with two exceptions:

EPA air monitoring team would not be allowed on-scene to gather background data.

The GST could provide backup as long as they remained outside the evacuated zone. This was one mile away.

After some discussion, Mr. Raby said that he would allow the OSC to observe the detonation, but no one else from EPA or the U.S. Coast Guard. He would allow Ben Eason to set up a movie camera in the bucket of a bulldozer. Once this was accomplished, Mr. Eason was to leave the scene. Prior to the detonation, the Army photographer, who was part of the "firing" part, could trip the camera.

It was obvious to the OSC that Mr. Raby wanted to demonstrate his authority. The OSC chose to monitor the radio in the command post rather than challenge his authority and risk getting someone hurt.

1:00 p.m. to 5:00 p.m. - The EOD team set charges on both tank cars. All of Hulcher's equipment was moved out of the area. Just prior to ignition of the fuses, Jim Littell, Kenneth Yates, Charles Dailey, and troopers for the State Highway Patrol took up stations on Highway 672 to follow and monitor the plume.

5:16 p.m. - The fuses were ignited, but only the charges on one tank were detonated. A huge, black plume evolved from the ignition of the vinyl chloride. It was raining at the time, which held the cloud down.

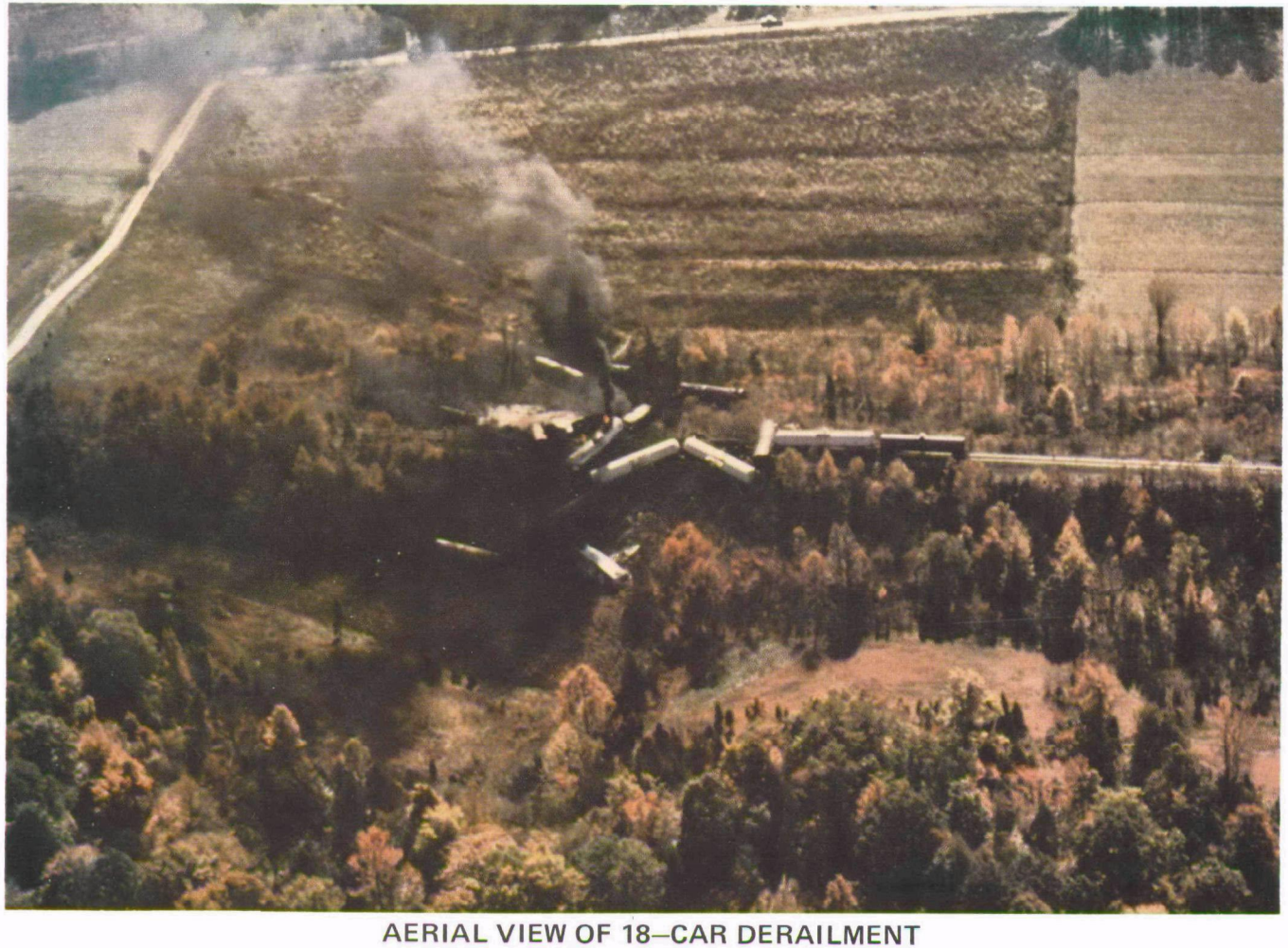
A report came in from Mr. Littell that if the wind shifted, the fumes could affect several houses. He recommended to the state police that the evacuation zone be increased. The rain mixing with the gases was creating an acid mist. Mr. Littell noticed a burning sensation on his skin. He recommended to state police that people beyond Highway 62 should remain indoors and stay out of the acid mist.

5:47 p.m. - The EOD team reported that plastic charges cut a hole in the top of the second tank car but not the bottom. Another plastic charge would have to be placed in the bottom of the tank car.

9:29 p.m. - The second charge on the tank car was detonated and the vinyl chloride was ignited. The same conditions that prevailed on the ignition of the first tank car existed at this time. Jim Littell and the state air people monitored the plume.

Both of the tank cars were successfully ignited with complete burning of vinyl chloride. Only one complaint was received from an elederly man who was caught in the acid mist. He complained about a burning sensation when he swallowed. It was recommended that the rescue squad take him to the hospital where he could be examined by a physician.

3. PHOTOGRAPHS



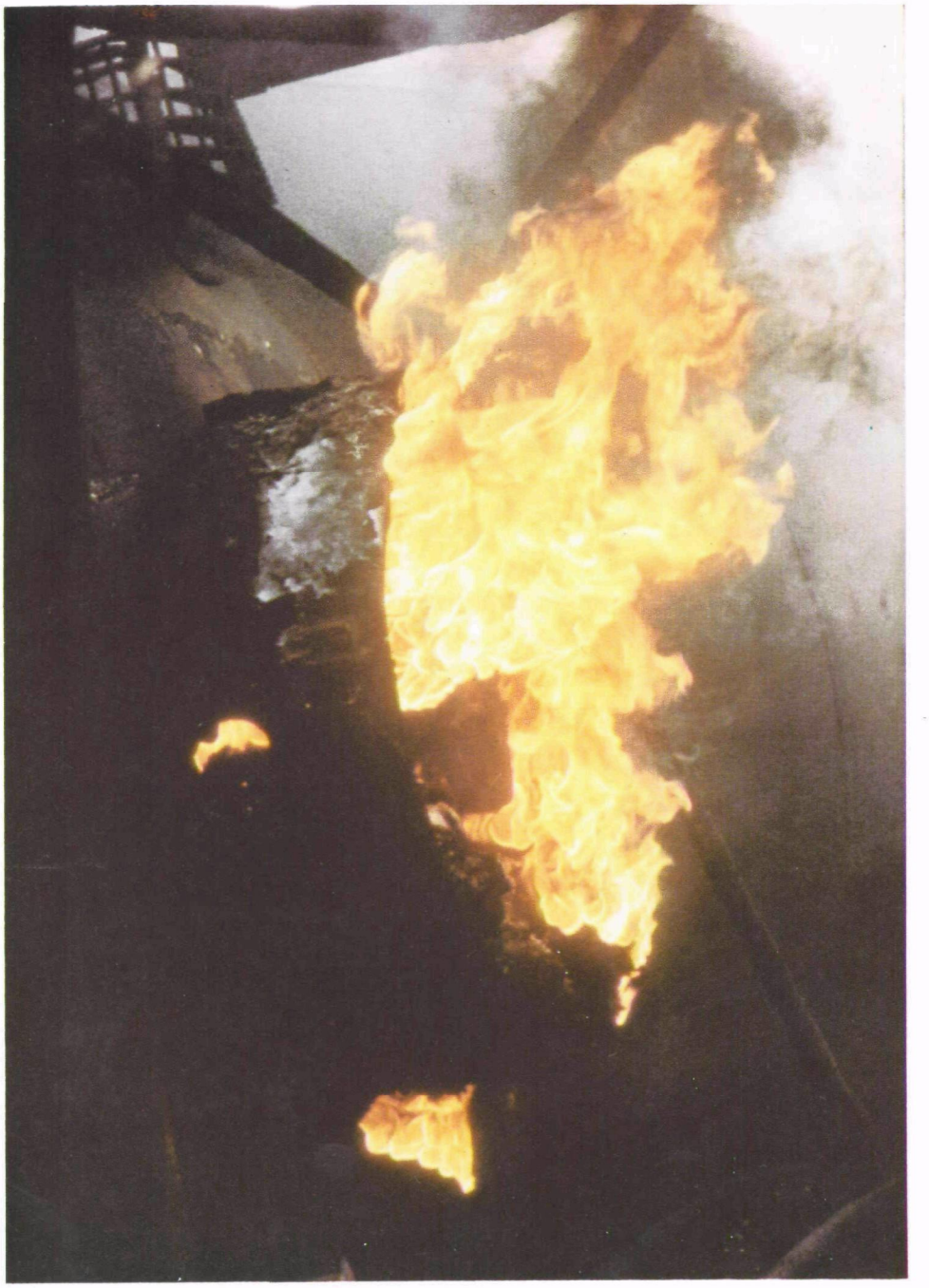
AERIAL VIEW OF 18–CAR DERAILMENT
NEAR CLAXTON, KENTUCKY

VINYL CHLORIDE TANK CARS ADJACENT TO HOPPER CARS
CONTAINING BURNING COAL

VINYL CHLORIDE TANK CARS. WHITE TANK CAR
CONTAINS HYDROFLUORIC ACID

TANK CARS, TWO OF WHICH CONTAIN CHLORINE

VINYL CHLORIDE TANK CAR (NOTICE FROST LINE)



CLOSE–UP OF RUPTURED TANK CAR WITH BURNING
VAPOR PHASE OF VINYL CHLORIDE

HEAVY EQUIPMENT MOVING TANK CARS TO
NORTH END OF TRACKS

CHLORINE TANK CAR IN FOREGROUND WAS
REMOVED FROM BURNING COAL CAR

TANK CAR OF HYDROFLUORIC ACID BEING PREPARED
FOR RELOCATION

HYDROFLUORIC ACID TANK CARS IN RELATIONSHIP
TO THE BURNING VINYL CHLORIDE CARS

TANK CARS OF CHLORINE AND VINYL CHLORIDE
REMOVED FROM WRECKAGE

DAMAGE TO OUTER SHELL OF TANK CAR

TANK CARS RE–RAILED ON NORTH END OF TRACKS

COMMAND POST FOR FEDERAL, STATE, AND LOCAL
OFFICIALS LOCATED ABOUT TWO MILES FROM WRECK SITE

ANOTHER VIEW OF THE COMMAND POST

4. PROBLEMS ENCOUNTERED

The cooperation between the participating state agencies and the EPA On-Scene Coordinator was remarkable for the first seven days. Air, water, and soil samples were collected. There was an exchange of information concerning the properties of the chemicals involved in the derailment. The operation was smooth and efficient up to the point just prior to the venting of the burning tank cars. During the last 36 hours, however, several problems arose.

October 24, 1978

An incident occurred between Jim Littell and Rod Raby just prior to the practice shot. Jim Littell was with the EOD team which was in the process of setting the charges. Rod Raby advised him that he was too close. Mr. Littell explained that he had the radio for the team. Mr. Raby stated that the team didn't need a radio and to move out of the area. Mr. Littell said that he was a big boy now. Mike Donohoe, who was in visual contact with both parties, told Mr. Littell that maybe he was too close.

The OSC, who was monitoring the radio in the command post, heard the conversation. He advised Mr. Littell that he should move out of the area. Littell reponded, "Okay, that's three and you are the boss--I'm gone."

From then on there was some friction between Mr. Littell and Mr. Raby.

October 25, 1978

The State Fire Marshall's representative refused the entrance of EPA and Coast Guard personnel on-scene, giving the reason that it was unsafe (however, at the time of the detonation, 60 people were reported to be near the tank cars). In addition, previous authority to enter the area granted GST personnel to set up backup equipment for EOD was suspended.

By not allowing EPA and state air monitoring personnel on-scene prior to the detonation, it was impossible to collect data on air quality. The OSC asked Mr. Raby his reasoning for not allowing EPA to monitor the air. He said that Mr. Littell could not come on-scene because it wasn't safe and that B.F. Goodrich could monitor air with their instruments and test for vinyl chloride. The OSC told Mr. Raby that EPA could not support any of the data taken by B. F. Goodrich unless EPA personnel were allowed on-scene. In addition, EPA wanted to test for hydrochloric acid and phosgene, as well as vinyl chloride. Mr. Raby said that EPA would have to monitor the air one mile outside the evacuation zone.

Privately, Mr. Raby stated to the OSC that he had called EPA in Washington, DC. It was his understanding that the OSC could take over the whole operation. If that occurred, he would withdraw all of the state resources. The OSC stated that it was his intention to work with the State Field Marshall, not take over the operation.

Moreover, the Gulf Strike Team had been requessted by the EOD team to provide backup with personnel equipment, so that, if one of the EOD team members were hurt, Gulf Strike Team personnel would respond and remove him to a safe location. The State Fire Marshall insisted that the backup unit remain outside the evacuated zone. This was totally unacceptable to the On-Scene Coordinator.

The basis for the State Fire Marshall's reactions is not known; it could have been a personality conflict or a breakdown in communication. Regardless, the success of the operation was jeopardized by actions taken by the Fire Marshall.

Also on October 25, Ben Eason informed the OSC that state personnel were concerned about questions from Frankfort, Kentucky, such as, "Isn't anyone from the state of Kentucky down there? All they see is EPA in the news media." This was not true; the news media interviewed state personnel several times. There was cooperation with the public information officer for DES, Mr. Gordon Nichols, on all news releases until he left.

Mark Holcomb said that everything in the newspaper was about EPA and that he wasn't going to allow that to happen again in his area. The OSC reminded both Mr. Raby and Mr. Holcomb that there were federal laws and state laws. If a spill occurred again in Kentucky, EPA would respond and utilize all of its resources to protect the environment.

As far as the newspapers were concerned, the OSC stated that he could not control what stories were written. All he could do was give them factual information about the spill event, as outlined in the National Contingency Plan.

A meeting took place between EPA and the various state agencies in November, 1978, to discuss the problems associated with the spill incident. The attached memos present information on the meeting and its outcome.

5. ANALYSIS OF AIR, WATER, AND SOIL SAMPLES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IV, Athens, Ga. 30605

DATE: December 5, 1978

SUBJECT: Trip Report 10/18/78 - 10/26/78
Technical Assistance Request for Air Monitoring Support -
Train Derailment, Princeton, Kentucky

FROM: James K. Littell (JKL)
Air Surveillance Branch

TO: Doyle T. Brittain, Chief
Air Surveillance Branch

SUMMARY

On 10/18/78 we received a telephone call at 0020 requesting assistance involving assessing air quality conditions around a 18 car derailment in Princeton, Kentucky. Mr. Jack Stonebreaker, designated On Scene Federal Coordinator, requested our assistance to accompany him to Princeton, Kentucky for technical assistance pertaining to assessing air quality toxicity and explosive levels, evacuation perimeters necessary to support environmental human and animal life in the wreck area, and possible long-term damage assessment affecting environmental surrounding caused by any air contaminant leakage from possible ruptured vessels involved in the train derailment.

We assembled our necessary air sampling equipment and departed for the derailment scene at 0500 on 10/18/78. Mr. Stonebreaker and I arrived at the derailment at 11:00 on 10/18/78. After visual inspection of the scene we found the following condition at the derailment site:

Eighteen cars were derailed on a 50 to 60 foot deep slope angling approximately 30 degrees from the railroad tracks downward. The derailed cars were reported to contain the following according to the railroad manifest supplied. The disposition of each was surveyed by EPA representatives on scene.

6 Vinyl chloride tanks - full - two burning - other 4 intact - liner structure unknown.

1 Sodium chlorate tank - contents partially spilled and mixing with ethyl acrylate

2 tanks ethyl acrylate - 1 open and spilling - eventually mixed and reacted with sodium chlorate

1 liquid potassium hydroxide ruptured with contents spilled on ground.

2 hydrogen floride - intact but in a dangerous position for possible rupture.

1 butadiene - intact - located adjacent to open ethyl acrylate car - possible explosive hazard

3 chlorine tank cars - one tank ruptured on the outer core with a coal fire burning around and under the exposed shell. The other two chlorine cars were apparently intact, but positioned on their respective safety valves rendering the safety relief valves inoperative.

I advised the Federal On Scene Coordinator to evacuate the wreck area, let the scene be naturally flushed by the atmospheric air before contractors should be allowed to attempt any cleanup. Also, I advised a 2 1/2 mile evacuation radius based on the thermally explosive nature of the remaining cars and the potential toxic concentrations of chemicals that could potentially be emitted violently in the case of an on scene explosion.

No personnel other than EPA or State Fire Marshalls were allowed on scene during this environmental purging process.

Five types of on scene air monitoring tests were conducted throughout the entire episode including chlorine, vinyl chloride, hydrogen chloride, phosgene and carbon monoxide. Additional emergency sampling tubes were ordered and received on 10-20-78 at 0200 to refill the depleted supply used at the wreck scene and surrounding neighboring areas.

During the entire episode from 10-18-78 to 10-26-78 EPA Air Surveillance personnel and other Coast Guard and EPA personnel provided the following assistance for the On Scene Coordinator.

1. Checked the wreck scene each morning before fire and environmental personnel entered to assure no lethal concentrations would overcome the entering personnel. Example: 8 dead in the chlorine episode incident in Youngstown, Florida in 1978 when local populas rushed to the scene of that derailment.

2. Responded to all air complaints from law enforcement and local citizens involving obnoxious odors, clouds of smoke, etc. mostly occurring during evening hours between 2100 till 0900 in the morning when ground level inversion conditions would lift.

3. Provided technical assistance to Mr. Stonebreaker, Federal On Scene Coordinator, by attending a two hour town meeting held on 10-21-78 in Dawson Spring, Kentucky. This was requested by Jack Stonebreaker to squelch rumors of unsafe air conditions being allowed to accumulate in that town originating from the wreck area.

4. Provided advice on the extent of a safe evacuation perimeter to be used. This was constantly verbally updated depending on working conditions and the potential of hazards to vessles being moved at the wreck

scene during cleanup operation being conducted by the Hulcher Corporation and the Illinois Central Gulf Railroad crews.

The following serious problems were encountered and should be addressed:

State of Kentucky Fire Marshall personnel would not allow any environmental personnel on or near the scene of the wreck during the last two days of the incident. The reasoning stated was not safety but they did not want Federal people being made aware of the progress of the cleanup because of publicity releases to the press constantly quoting EPA personnel as to the disposition of the public safety involved and environmental damage to areas surrounding the derailment scene. This caused unsafe working conditions to all civilian, local, state and army personnel on the derailment scene during the final stages of the cleanup.

The Kentucky State Fire Marshall's supervisor would not allow EPA air personnel on scene for safety inspections on the day of demolition, 10-24-78. They said that B.F. Goodrich's personnel were monitoring for vinyl chloride using a continuous vinyl chloride analyzer. This same analyzer was used by EPA and State Air Pollution personnel on 10-23-78 and found to be unreliable and unstable. Local hydrocarbon interferences, either negative or positive, were not addressed. Also, Kentucky State Fire Marshalls provided Army personnel with a lower explosion level meter that, as like the B.F. Goodrich analyzer, was not calibrated. The EOD personnel did not know this at the time. On 10-24-78 at 20:54 "batteries went dead" in this explosion meter being used to monitor the wreck scene combustible gas concentration while Explosive Ordinance Demolition personnel were preparing to detonate the second of two vinyl chloride tank cars. Fire Marshall Rabys radioed instructors to "hit it on its side." These unprofessional sampling techniques could have resulted in the loss of life of the four Explosive Ordinance personnel from Fort Campbell, Kentucky plus all bystanders allowed on scene by the Kentucky State Fire Marshall.

The evacuator's perimeter for the wreck scene set by the State of Kentucky Fire Marshall's Office was between 3/4 to one mile. EPA personnel requested a minimum of two and one-half miles due to the severity of the compounds. No increase in evacuation perimeters were requested by the Fire Marshall's Office during the actual detonation of the vinyl chloride tanks. This resulted in the unnecessary exposing of local residences downwind of the detonation. The evacuation perimeter was enlarged when EPA personnel visually observed plume or black smoke discharged from the blast which was approximately 300 to 350 feet high, 1/2 mile wide and of unknown length, set down on the downwind residential areas after the first detonation. State police offices, local populous, and State and local Civil Defense and environmental personnel voiced considerable concern about the breathing conditions and acid mist forming from this discharged plume. The plume

did not dissipate rapidly and citizens downwind of the detonation were reportedly taken to the local hospitals for treatment from breathing restrictions and burning skin. EPA and State Air Pollution peronnel downwind of the detonation experienced skin burning, clothes were bleached with white spots from the acid mist. Breathing was laborous after the exposure but it was not known if it was from the fumes or lack of sleep. No detectable readings of vinyl chloride, hydrogen chloride, or phosgene were detected at approximately 5 miles downwind of the detonation area and inside the black plume discharge. Burning of the skin was extremely evident.

The Princeton Fire Department was on scene during the demolition and allerted to go into the wreck area if a house located on a bluff overlooking the blast area was to catch fire. They were not made aware of any of the dangers resulting from high temperature burning of vinyl chloride resulting in phosgene, or from the vinyl chloride liquid itself should they come in contact with this principle substance. I talked with the Princeton Fire Chief about protective equipment and made him aware of the danger. This action could have caused unnecessary health problems or possibly a loss of life to one of the local fire fighters or to the 50 to 75 spectators positioned approximately 150 yards upwind of the blast area.

ACTION

Action should be immediately taken to stop Kentucky State Fire Marshalls from 1) Grossely and unnecessarily endangering the local populations and road travelers from inadequate and unprofessionally devised evacuation perimeters. Example: 3/4 to one mile during detonation of 30,000 gls. of vinyl chloride 10-24-78. 2) From hindering State and Federal air pollution specialists from doing their duties of protecting cleanup workers, State and Federal environmental and investigation personnel, etc., and local population and fire fighting crews by illegally instructing State Police officers to keep these specialists away from the scene. 3) From providing inadequate and uncalibrated air monitoring equipment and unprofessional advice to personnel from the Explosive Ordinance Demolition teams or similar professional organizations called into the area when they are assisting in disposing of this type hazardous material containers.

A conference should be set up with representatives of State agencies involved to determine the responsibilities of each agency during this type emergency to eliminate this type dangerous situation happening again.

BACKGROUND

Request from Mr. Jack Stonebreaker of 10-18-78 for assistance in responding to train derailment emergency of 10-17-78.

James K. Littell

cc: Al Smith

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region IV, Surveillance and Analysis Division
College Station Road, Athens, GA 30605

DATE: 11/2/78

SUBJECT: Analysis of Samples from Train Wreck at Princeton, KY

FROM: Tom B. Bennett, Jr., Chief
Analytical Services Section

TO: David Hill, Chief
Ambient Monitoring Section

SUMMARY

Attached are the results of analysis of the Princeton, KY, train wreck samples (SAD Nos. 78C2943-46).

The water sample (78C2944) was analyzed by the purge-and-trap procedure with no vinyl chloride or other volatiles being detected with a minimum detection limit of 5 ug/1.

The sediment samples were all analyzed by a head-space procedure for vinyl chloride and other volatiles.

The sediment samples were extracted with methylene chloride and the quantitations on the ethyl acrylate were made from this extraction.

The gas chromatograph/mass spectrometer was used for the above analyses.

Five grams of Sample No. 78C2946 were diluted in water and analyzed by the automated indophenol procedure. Approximately 40 mg/kg of ammonia was found in this sample.

No other compounds were identified above a 0.5 mg/kg detection limit.

ACTION

Transmittal of data.

BACKGROUND

Request for analysis.

Enclosure

DATA REPORTING SHEET

Project Train Wreck

Princeton, KY

CHEMIST E. W. Loy, Jr. RECEIVED 10/25/78 COMPLETED 11/1/78

AD # 3C	STATION #	DATE SAMPLED	Vinyl Chloride mg/kg	Ethyl Acrylate mg/kg	Ethyl-nor-Propanoate[1] mg/kg
	ANALYSES TO BE RUN				
943	1	--	ND(0.5)	4.4	ND(0.5)
944	WATER SAMPLE 1A	10/23/78 1535	ND(*)	NA	NA
945	2	--	ND(0.5)	28,000	tr<0.5
946	3	--	ND(0.5)	ND(0.5)	ND(0.5)

ND- None detected.

Tr- Trace

NA- Not analyzed for.

1/ Tentative identification

Minimum detection limits are in parentheses.

* - Minimum detection limit for water sample is 5 µg/ℓ.

Kentucky Department Of Agriculture

FRANKFORT

10-24-78

Gas Chromatographic Procedure for the Determination of Ethyl Acrylate Residues in Soil

Reagents

Ethyl Acrylate Standard, E.P.A. SAMPS. FROM CLAXTON, Ky. ROBIN WRECK

Apparatus

50 Ml Screw-Top Erlenmeyer flasks (modified by boring a hole in the plastic cap without puncturing the septum)

5000 microliter gas-tight syringe

Gas chromatograph equipped with a flame ionization detector and a 1.5% SP 2250, 1.95% SP2401 column

Constant temperature water bath

Procedure:

Sample is ground to pass a 20 mesh sieve. Sample and standards are weighed into separate 50 ml flasks. Flasks are capped and placed in a boiling water bath for one hour. At completion of the volatilization period, with flask remaining in the water bath, the septum is pierced and the sample of the volatile matter is chromatographed under the following conditions:

Column temp:	75 C
Flow:	24 ml/min
Attn:	10
Inj temp:	105 C
FID temp	250 C
Slope Sens:	.05

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

REPORT OF ANALYSIS

1. SAMPLE NO.	2. DATE COLLECTED
1,2 & 3	
3. REGION	**4. EPA REG. NO.**
5. ESTABLISHMENT NO.	

6. DESCRIPTION OF SAMPLE
Three soil samples in glass containers

7. NAME AND ADDRESS OF ESTABLISHMENT WHERE SAMPLE WAS COLLECTED *(Include ZIP code)*

8. PRODUCT NAME
Ethyl Acrylate Residues

9. LOT OR CODE NUMBER(S)

10. NAME AND ADDRESS OF PRODUCER *(If different from 7 above)*

11. RESULTS OF ANALYSIS

Sample	Ingredient	Method	Amount Found
Soil-1	Ethyl Acrylate	GC-FID	Negative
Soil-2	Ethyl Acrylate	GC-FID	173 ppm
Soil-3	Ethyl Acrylate	GC-FID	55 ppm

12. LABORATORY COMMENTS
– Odor pronounced on All samples –
Assume escape of some of the volatile in spite of freezer storage

J. B.
Div of Hazardous Mat. + Waste Mgmt
Dept of Nat'l Resources + Env. Prot
State of Ky

13. SIGNATURE OF LAB SUPERVISOR	14. LABORATORY	15. DATE
Scott Bryan Scott Bryan 5-9	Ky-St Fed Meat Lab	10-24-78

EPA Form 3540-5 (Rev. 5-76) PREVIOUS EDITIONS ARE OBSOLETE. – SAMPLE RECORD COPY

Illinois Central Gulf

An IC Industries Company

Illinois Central
Gulf Railroad
Two Illinois Center
233 North Michigan Avenue
Chicago, IL 60601
(312) 565 1600

November 9, 1978

Mr. Daniel R. Dolan
Chief, Hazardous Materials & Waste Management
Division of Hazardous Material Waste Management
Pine Hill Plaza
Frankfort, KY 40601

Dear Mr. Dolan:

Reference is made to our meeting on November 7, 1978 at Earlington, Kentucky concerning possible environmental contamination resulting from the train derailment at Mile Post 171, Claxton, Kentucky. In an effort to determine the extent of any future environmental problems at the site, we agreed to execute the following procedures:

1) On the north side of the track in the area where the ethyl acrylate and vinyl chloride compounds were diked, qualitative samples of the soils in the dike will be taken at weekly intervals to determine the rate at which dissipation occurs.

2) On the north side of the track, core samples of embankment soils will be taken to determine the extent to which the ethyl acrylate soaked into the embankment.

3) The present dike on the north side will be enlarged to insure that all residual materials in the dike will be sufficiently contained. Additional grading will be used to insure the surface runoff will be directed away from the dike area.

4) The present dike on the south side of the track containing the vinyl chloride residuals, will be modified to insure total containment.

5) A well will be dug at the toe of the embankment on the south side to monitor the ground water quality of the area. Samples will be taken at monthly intervals.

6) An additional soil sample on the south side at the toe of the embankment will be analyzed qualitatively for vinyl chloride.

All results of these analyses will be forwarded to you as soon as possible. I trust that this will meet with your approval, and if there are any other questions please feel free to contact me on Extension 2384.

Very truly yours,

M. J. McKinney

M. J. McKinney
Environmental Engineer

cc: Mr. John E. McClure, Jr.
Environmental Supervisor
Hazardous Waste Section
Pine Hill Plaza
Frankfort, KY 40601

Mr. Jack Watkins
Environmental Specialist
Division of Hazardous Material & Waste Management
Pine Hill Plaza
Frankfort, KY 40601

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

REPORT OF ANALYSIS

1. SAMPLE NO.	2. DATE COLLECTED
127376	10-27-78
3. REGION	4. EPA REG. NO.
5. ESTABLISHMENT NO.	

5. DESCRIPTION OF SAMPLE
5 Soil & 1 Liquid samples in glass containers

7. NAME AND ADDRESS OF ESTABLISHMENT WHERE SAMPLE WAS COLLECTED *(Include ZIP code)*

8. PRODUCT NAME
Vinyl Chloride & Ethyl Acrylate Residues

9. LOT OR CODE NUMBER(S)

10. NAME AND ADDRESS OF PRODUCER *(If different from 7 above)*

11. RESULTS OF ANALYSIS

Sample #	Ingredient	Method	Amount Found
4	Vinyl Chloride	GLC-EC	Positive
	Vinyl Chloride	GLC-EC	Positive
6	Vinyl Chloride	GLC-EC	Trace*
7	Vinyl Chloride	GLC-EC	Positive
8	Ethyl Acrylate	GLC-FID	Positive
9	Vinyl Chloride	GLC-EC	Trace*

12. LABORATORY COMMENTS

* Compounds could be showing contamination and not actual residues.

13. SIGNATURE OF LAB SUPERVISOR		14. LABORATORY	15. DATE
Scott Bryan	5-12	Ky St-Fed Mt Lab	11-1-78