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CHLORINE LEAK THREAT AND EVACUATION:
OBSERVATIONS ON COMMUNITY COORDINATION

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Introduction

At approximately 5:15 a.m. on March 19, 1972, a southbound tow of nine barges hit the head of Shippingport Island in the Ohio River, an area just north of the heart of Louisville, Kentucky. Upon ramming the island, four of the nine barges broke loose and drifted downstream on the north side of Shippingport Island through an area known as the Falls of the Ohio. One barge was immediately recovered; a second barge with a cargo of chrome ore was lost and presumed sunk; a third barge laden with sulfuric acid came to rest next to a hydroelectric plant making up part of McAlpine Dam and was retrieved some days later. The fourth barge, and the one of concern in this study, carrying 640 tons of liquid chlorine in four pressurized cylinders, lodged partly submerged in the second of four tainter gates in the McAlpine Dam.

Later testimony suggested that a lack of adequate communication between the river tows and a bridge tender operating a railroad drawbridge was instrumental in causing the mishap. The tow pilot testified that he gave the usual signals for raising the bridge (one whistle blast and the flashing of a spotlight on the bridgetender's hut) indicating that he was entering the channel leading to the McAlpine locks on the southside of Shippingport Island. The bridgetender claimed to have seen the spotlight but heard no whistle blast and did not immediately raise the bridge. Noting that the bridge had not opened, the pilot slowed the tow to about one mile per hour. As the tow slowed it was caught by the river current and started drifting sideways toward the Indiana shore on the north. Seeing that the tow was to hit Shippingport Island, the pilot attempted, by cutting his engines, to beach the tow. His efforts failed and the four barges broke loose.

The mishap described above was the initial incident that triggered better than four weeks of planning and action by various private, local, state, and federal agencies involved in the many aspects of an evacuation and salvage operation. The focus of this report is not upon the technical aspects of the salvage procedure. Rather, our concern is with the organizational response to the possible threat of a chlorine leak from the disabled barge. This response can be seen as having two interrelated dimensions. On the one hand there was the response primarily by some federal agencies, notably the Coast Guard and the Army Corps of Engineers, who with the aid of a private salvage contractor dealt almost entirely with the planning and execution of the engineering aspects of stabilizing the barge, removing the chlorine, and recovering the derelict from the dam gate. Contingent upon this technical phase of salvage was the second dimension of organizational response. The focal point of this response was the decision involving mostly local officials, to evacuate some 4,000 residents of a 35 block area of Louisville near the barge site for a 24 hour period during which the barge was to stabilize in order that the chlorine might be removed. The organizational planning for, the execution of, and the problems encountered during this evacuation are central to this examination. In dealing with these

dimensions our focus will concern itself with the boundaries, domain, legitimacy, roles, and interactions of the participating organizations.

Data for this report were gathered by two Disaster Research Center (DRC) field teams that visited Louisville on two different occasions during the month of April, 1972. Intensive interviews were conducted with one or more officials in 14 federal, state, county, city and private organizations actively involved in the evacuation preparations and operations. Only indirect attention was given to those agencies such as the National Weather Service or the salvage contractor who had little to do directly with the evacuation but were primarily concerned with engineering aspects of the salvage operation and/or with providing technical information about the state of the salvage progress and meteorological conditions. Other data sources utilized in this study included some field observations during the operation, a wide variety of mass media accounts, and various memoranda, reports and other written documents obtained from different organizations.

In the paragraphs that follow a brief descriptive chronology is provided to highlight the major decisions and activities connected with the evacuation. The period of time covered by this chronology stretches from March 19th, the day of the barge accident, up to and including April 2nd when the barge was stabilized and the evacuation ended. This time span does not coincide with that involved in the actual salvage operation since the last of the chlorine was not safely pumped from the barge until around April 10th and the barge removed from the gate sometime thereafter. However, from the points of view of the organizations primarily involved with the evacuation, once the barge had been stabilized and the evacuation ended the critical phase was over and a return to normal operation was feasible.

In the sections following the chronological account the focus of the presentation will narrow and deal more explicitly with activities and problems encountered by selected organizations. Special attention will be directed toward the Office of Emergency Preparedness (OEP) and the local office of Civil Defense (CD) who shared the role of organizational coordinator throughout the emergency period.

Descriptive Chronology

Following notification from the Coast Guard of the barge accident on the morning of March 19th, it appears that there was little inter- or intra-organizational activity by most Louisville agencies until March 25th. Major exceptions to the general inaction were the Department of Public Works, the Corps of Engineers, and the Coast Guard which were involved with salvage operations at the barge site. Some other local organizations did assert that they closely monitored the barge operations and were actively engaged, intra-organizationally, in preparing for the emergency situation. However, records, recollections of most officials, and inability of interviewed respondents to remember specific, concrete actions undertaken, suggest there was little in the way of emergency planning or mobilization that first week.

One federal official who said there was considerable procrastination between and among the various agencies responsible for planning and organizing the emergency response attributed it in large part to the mayor's absence from the city until March 26th and a general unwillingness by the mayor's subordinates to initiate any decision making process. However, a local health official offered another interpretation. In his words, "the only person interested in doing anything was the Civil Defense director and he couldn't seem to stir anybody up" even though an Emergency Operations Center (EOC) was activated in CD headquarters in City Hall.

As far as can be ascertained, it appears that the major activities of the first week following the mishap included the arrival of OEP personnel and their establishment of an EOC (totally separate from the local EOC just mentioned) for federal agencies in the Federal Building in downtown Louisville. This of course was in addition to the Coast Guard, the Army Corps of Engineers, and a private contractor starting to set up salvage operations at the barge site. The Department of Public Works was also actively involved at this point.

What triggered more organizational activity is difficult to ascertain. During this first week there were a number of stories or "rumors" circulating among officials that the barge was soon going to explode. One respondent at least thought that such stories were instrumental in motivating the various city, county and other agencies into finally taking some positive and concerted interest in emergency planning and preparations.

Whatever the reason, on Saturday, March 25th, the first area-wide multiple agency meeting was called at CD headquarters. Representatives were present from most city and county departments, a number of state and federal agencies, the hospitals, the Red Cross, and from a diversity of organizations on the Indiana side of the river. The meeting was ostensibly called to brief officials on the current situation and to begin emergency planning. The results of this conference and another like it on the following Sunday, the 26th, were characterized as mixed. One official described the two meetings as being "just a lot of hollering." The "hollering" was reported as being directed primarily at OEP, for some local officials felt that OEP was not keeping them informed about the barge situation. During this time, CD, at whose behest those meetings were called, emerged as the organizational co-ordinator at the local level, and operated out of the local EOC at City Hall.

On Sunday, March 26th, in addition to the large meeting described above, a smaller meeting was held for key hospital personnel and Health Department officials. At this get together the hospitals were notified of an alert situation, briefed on methods of treatment of chlorine casualties, and asked to ascertain their needs requisite for full emergency preparedness. Louisville Memorial Hospital (located near the barge site and subsequently evacuated) put its disaster plan into effect. Key personnel were placed on 24 hour call, patients capable of discharge were dismissed, furloughs were instituted and vital services located in the basement or on lower hospital floors were consolidated and moved upstairs. This latter move was taken because chlorine, two and a half times heavier than air, clings to the ground and has an affinity for low places or depressions. Thus, by increasing one's altitude one decreases the possibility of receiving fatally toxic exposure.

Monday, the 27th, was relatively quiet. Most activity was intra-organization; hospitals consolidating wards, distributing literature on chlorine treatment, and determining supply shortages; the police department and traffic engineer planning evacuation routes; and the Red Cross updating its plans for shelter operation.

The 28th, Tuesday, saw evacuation planning getting down to specifics. Information prepared by the National Weather Service and Environmental Protection Agency was instrumental in allowing local officials to obtain an adequate grasp of the leak threat, its seriousness, and ramifications. Feedback from area hospitals indicated severe shortages of intravenous cortisone, the drug of choice for treatment of chlorine poisoning, and oxygen regulators for portable tanks. Supplies of both were located and stockpiled at nearby Fort Knox.

The evacuation plan eventually used was finalized Wednesday, the 29th. The plan proposed a core, mandatory area of evacuation encompassing some 35 square blocks and from 4,000 to 4,800 people. A voluntary evacuation area somewhat larger and more populous was designated to the south and east of the mandatory locale. Choice of the evacuation sites was contingent upon a number of variables; wind direction and speed, proximity to the barge site, altitude, traffic patterns, and accessibility to evacuation routes, to mention just a few. A health official and strong supporter of this quadrant plan of evacuation explained its necessity in terms of buying "reaction time". By evacuating the relatively small core area, the nearest any resident would be to the barge would be just over one mile. Such a distance, under most meteorological conditions would provide approximately one half hour in which to activate forced evacuation measures should something go wrong at the barge site.

Though the quadrant plan was generally agreed upon, the actual decision to evacuate was not made that day. The police department indicated a concern over its ability to secure the area adequately. Several groups raised questions concerning the legality of enforcing a mandatory evacuation, if that became necessary. In addition, political considerations had to be carefully examined, since some felt that the city administration was going to be perceived as asking for evacuation of an area in which it had considerable political strength.

After an extensive morning conference on Thursday the 30th, the mayor, at 1:30 p.m., announced to department heads his decision to evacuate following the quadrant plan. The original plan called for evacuation to begin at 9:00 a.m. Friday, the 31st, lasting approximately 24 hours. At 6:00 p.m. that Thursday evening federal officials notified city hall the timetable for barge stabilization was to be delayed one day. Public announcement of the evacuation was made Thursday evening by the mayor in a television appearance. The how, what, why, and when of the evacuation procedure was explained that evening and repeated daily by the mass media. The mayor's announcement scheduled the evacuation for Saturday, April 1st, at 9:00 a.m.

Other actions finalized Thursday included the selection and notification of the four county high schools to be used as temporary evacuee shelters. Arrangements were made for transportation needed by those evacuees who did not have their own. Dozens of school buses were designated for this task.

The site of much of Friday's activity was Louisville Memorial Hospital. Located in the evacuation area, the hospital continued to discharge patients for weekend furloughs and had but 44 patients left early in the morning -- less than half of its normal 100 patient load. A suburban elementary school was selected to serve as a temporary hospital shelter. On Friday afternoon the hospital staff initiated its in toto move to the shelter. Outside of beds and mattresses provided by the Red Cross, the hospital furnished all of its own supplies, services, and personnel (including 20 nurses and six physicians).

Evacuation morning, Saturday April 1st, Memorial Hospital moved its remaining 32 patients to the shelter. The hospital was closed and turned over to the Police Department and National Guard who established a field command post there. The evacuation officially began at 9:00 a.m. with the mandatory area cleared by noon. Fifty volunteers from CD and the Building and Housing Authority knocked on doors informing residents of the evacuation. Two hundred National Guardsmen were mobilized. Their activities included patrol and perimeter security in the evacuation area, riding evacuation buses, and assisting the county police department with shelter security.

The mandatory area was totally evacuated. Only several of the school buses had to be used since most residents used their own means of transportation to leave the area. A number of residents were reported to have left the voluntary area also though no official efforts were made to observe this population movement. The Red Cross opened and operated two shelters in suburban high schools where a total of 195 evacuees registered; most of the evacuees, as is usually the case, went to friends and relatives.

Easter Sunday, April 2nd, brought the evacuation to an end as the barge was stabilized. Memorial Hospital personnel returned to the facility early in the day to ready it for returning patients. At 11:30 a.m. notification was given that a return to the evacuated area would be possible commencing at noon. Memorial's patients, staff, and supplies returned to the facility, with business as usual resumed by 5:00 p.m. Residents started returning to their homes in the afternoon though a security perimeter was maintained to exclude non-residents and sightseers from the area. By midnight emergency mobilization plans were discontinued as operations returned to normal in the many participating organizations. (No evacuation ever took place on the Indiana side of the river.)

General Observations

The chlorine leak threat encountered in Louisville differed in at least two dimensions from most other disaster situations studied by DRG. The most salient of the dimensions was the slow onset of the disaster agent.¹ Unlike earthquakes, flash floods, or tornadoes which strike with little or no warning, the critical period in which the danger or possibility of chlorine leak was greatest took place two weeks after the initial barge mishap. The importance of this slow onset cannot be minimized.

Key officials in every emergency organization contacted by DRC cited the slow onset of the leak threat as being crucial in their organization's reaction and planning. CD commented upon the situation by noting that "we had time to plan". A Red Cross official stated that "There was a great deal of preliminary planning". Every organization attributed the successful outcome of the evacuation to the week period (and in some cases, two weeks) of time available to them. Lines of communication could be set up, key personnel could be procured, and the general public would be informed in great detail and in advance of the steps to be taken before, during and after the evacuation. Given the slow onset, an air of emergency was almost lacking. One official described the evacuation as a "soft-sell", as a "weekend away from home" idea. Another commented that "We tried to play this as low a key as possible". This certainly contrasts with the standard disasters where evacuation of community residents is an after-the-fact procedure carried out under situations of great urgency and stress. In Louisville, the evacuation was orderly and well-organized. Rather than occurring after the appearance of and destruction wrought by a disaster agent and hence reactive, the evacuation preceded the critical emergency period and was precautionary.

The second difference between the Louisville chlorine leak threat and other disasters studied by DRC is that there was no "mass assault" or convergence behavior upon the disaster site. The disaster literature is full of instances where a community is so deluged by an influx of personnel that rescue and relief activities are hampered. This was not the case in Louisville. Sightseers, helpers, relief workers, relatives and so on at no time posed any problem for any emergency organization and there were no difficulties in controlling traffic of persons or cars. This was due, in part, to the specific location of the disaster agent. Even though situated only a few blocks from the heart of downtown Louisville, the chlorine barge was almost totally inaccessible to the general populace. Lying partly submerged in a gate in the McAlpine Dam in the middle of the Ohio River, nestled between the dam and the hydroelectric plant, downstream from the non-navigable Falls of the Ohio, and separated from the normal shipping and boating channel by the whole width of Shippingport Island, the chlorine-laden barge was definitely no sightseer's panacea. Only the bridges crossing the Ohio River from Louisville to Indiana shore afforded sightseers or the curious any view of the general area, yet even these were too far away to be adequate. Police traffic control kept automobile movement steady across the bridges so that no tie-ups occurred even here. This inaccessible site, coupled with the low-key tone of the emergency displayed by the proper authorities during the two weeks prior to the evacuation, contributed to the lack of any convergence behavior. As one police officer succinctly summed it up, "We were lucky in the site".

Community Coordination

As was mentioned in the Introduction, there were two interrelated dimensions in the total emergency situation, that of the technical operations concerning the barge stabilization and chlorine retrieval and that of the

planning and execution of the evacuation. This report's major focus is upon the latter, but a few comments are necessary concerning the former. The on-site barge activities were within the domain of the U.S. Coast Guard and the Army Corps of Engineers, along with the civilian salvage expert hired by these organizations to do the actual salvage operation. The coordination of these agencies was through OEP, which acted as spokesman for these technical aspects of the salvage operation.

In a sense, the response of every emergency organization was contingent upon the on-site technical decisions reached by the Corps, the Coast Guard and the salvage captain. For example, it has already been mentioned that the evacuation was originally scheduled for Friday, March 31, but that it was set back 24 hours until Saturday, April 1. This was due to unexpected delay in the welding of cable hooks on the submerged barge. When it became apparent that the welding was proceeding slower than planned, the on-site officials notified the local officials responsible for the evacuation and the evacuation was postponed. Another example of technical decisions providing the parameters within which emergency decisions were reached can be seen in the length of the evacuation. Time-wise, the evacuation was for a 24-hour period, from noon Saturday, to noon Sunday. This figure was arrived at from the salvage operator's estimate that it would take him about ten daylight hours to secure the barge. This provided for three hours of evacuation in the morning, the afternoon hours for the major part of the barge stabilization, and the following morning for the conclusion of the stabilization process. No work could be done at night. Thus, a total of 24 hours were needed for the securing operations and the evacuation was set at that length.

Throughout the rest of this report, our focus will mainly be upon the organizational involvement in the evacuation of the more than 4,000 residents from the area near the barge site, in what was called the primary or mandatory evacuation area. It should be kept in mind, however, that the on-site barge activities and the concomitant technical decisions served as important variables in the evacuation and any comprehensive study of the total emergency situation in Louisville must include them also. As DRC has found elsewhere also, technical decisions are usually more than engineering or scientific issues for they often have important implications for group response to an emergency.

It has been noted that the chlorine leak threat was characterized by its slow onset. Almost a full two weeks intervened between the initial barge accident on March 19 and the evacuation on April 1. This span of time, particularly the last week, enabled the organizations involved to plan carefully for the evacuation and successfully execute it. One official stated that "The operation was very smooth". Another stated that his organization "had no major problems". Yet this cannot be said about every organization. Not all organizations had smooth operations nor did all organizations lack major problems. Two organizations, in particular, encountered quite considerable difficulties. These were the local Civil Defense office and OEP.

A disaster situation is an occasion where a large number of disparate organizations work toward a common goal, that of alleviating the emergency threatening their community. If the disaster agent is of small severity and the scope of impact not too large, local organizations can usually cope with

the emergency. As community size, disaster agent, and scope of impact increase however, local organizations by themselves are not often sufficient to accomplish all disaster-related tasks. Organizations from many levels of government then become involved. In addition to the local groups, both public and private, there are now county, state and federal organizations working in the disaster area. Such was the case in Louisville. These many organizations, however, have different functions to perform and each conceives of its own tasks and the tasks of others in slightly different terms. To bring some semblance of order into this maze of activity, certain agencies attempt to act as coordinators for the rest. In the emergency we are considering, the CD task was that of coordinating the city, county and state agencies; OEP's task was that of coordinating the federal agencies. Difficulties arose, however, at the interface of these two coordinating agencies; specifically, there was little coordination between these two coordinating organizations.

Interviews with the city, county, and state agencies involved in the evacuation procedure were very consistent in defining the role of the Louisville-Jefferson County Civil Defense office as that of a "coordinating agency." A welfare official stated that the Civil Defense office "should pull the local agencies together." A police officer observed that "CD coordinated the activities of the units involved." CD officials themselves said that the function of their group was as a "coordinating agency for all local government units." Thus, there was a high degree of consensus among the local community organizations, including CD itself, about the role of the organization during emergency situations.

During the planning period for the evacuation, the EOC set up by CD in the officers at City Hall provided a base of operations for local coordination. As already noted, in the early days after the barge accident and during the mayor's absence from the city, CD called and presided over a number of meetings that took place at CD headquarters as well as some at Louisville's new Red Cross building. At these meetings, many possible plans were discussed, from total evacuation of the city of Louisville to just an alert warning. Specific organizations geared their preparations with others as they awaited the final decision which rested with the mayor. In addition to holding meetings with and for representatives of the key local emergency organizations, the local CD office notified state Civil Defense in Frankfort of the developing crisis. It also eventually asked state officials for National Guard troops to help in the evacuation. CD also contacted the US Army at Fort Knox, Kentucky and requested and received 7,500 gas masks for emergency personnel use.

The CD office played primarily a coordinating role in the emergency. In the opinion of the local city, county and state officials interviewed by DRC, the local CD group performed its role quite adequately; as one official put it: "the local level organizations were well coordinated." Few complaints were voiced.

The task of coordinating the federal agencies involved in the Louisville evacuation fell to OEP. Strictly speaking, no federal agencies were participants in the evacuation as such. Their function, instead, revolved around the on-site barge salvage operations. Thus, OEP was responsible for the coordination of the Coast Guard, the Corps of Engineers, the Environmental Protection Agency, and several other federal organizations as well as the

civilian salvage operator. Representatives of most of these organizations were located within the security perimeter set up at the shoreline as well as the EOC located in the Federal Building. Since DRC did not focus on the technical aspects of the salvage operations, we obtained no direct knowledge of how well the federal agencies were coordinated. The indirect evidence would suggest that there were no major problems.

When asked to comment on the further role of OEP, a top federal official stated that there were two primary functions that the organization performed. (1) OEP was a technical information gathering organization with responsibility for dissemination of information to appropriate groups. And (2) OEP was a support and advisory agency for federal officials in Washington and for local officials. This official observed that, concerning the latter, OEP was strictly advisory and took no part in local decision making.

From the beginning, there was friction between OEP and the local CD. This took place on a number of levels. One area of discord revolved around the establishment of the two separate EOC's. Although there was a direct telephone line between the two EOC's, communication did not flow smoothly from one to the other. OEP viewed itself, and the local organizations viewed OEP, as the group responsible for the dissemination of information from the barge site. There was no disagreement about the matter of responsibility; OEP was supposed to "provide the locals with technical information." However, city officials did not see this happening. Supposedly, OEP was to provide CD -- the local coordinating agency -- with technical information from the barge site so that this information could be used in the formulation of evacuation planning. This was not done; OEP bypassed CD insofar as some local officials were concerned. One official saw OEP's role in this respect as "nothing". One CD official stated that he was left out of every important meeting called by OEP. There were indications that some local officials received most of their technical information concerning the salvage activities not from OEP but from mass media sources, especially from a live television camera located on McAlpine Dam itself. Another official stated that "there was a lack of information being given to us by the feds." In general, there was a rather strong feeling that important information was being withheld from local officials at the local EOC.

Federal personnel, on the other hand, felt that all necessary information was being disseminated to the appropriate groups, even though local CD might not be directly informed. This matter is related to a second level of discord between OEP and CD. It has to do with something that frequently arises in disasters when national, regional or even state level personnel move into a local situation. Generally more experienced with disaster situations than local people, they tend to assume they have more knowledge about such kinds of emergencies and how to react to them than do officials in the affected community. Local persons of course believe they know something about their own situation and are resentful of "outsiders" who they see as attempting to take "their" disaster away from them. The overt strain in the relationship is often explained in terms of "personality conflict" whereas it usually has more to do with interaction between extra-community, disaster experienced professionals and generally inexperienced locals. This pattern surfaced in Louisville. Outsiders were viewed as arrogant and highhanded; locals were perceived as "inept" and "unable to cope with the situation".

Such perceptions stemming from the simultaneous involvement of both local and nonlocal organizations obviously do not make for good communications or a coordinated effort.

There was disagreement in Louisville also on how OEP carried out its second function as a support and advisory group for local agencies, and particularly the mayor's office. The official position was that OEP could not and did not take part in local decision making about evacuation. However, some local officials felt there were at least two separate occasions where they interpreted OEP activities as going beyond support and advisory functions. The first instance was in the early stages while the mayor was still out of town, where as they saw it, OEP had pressured for the development of a local evacuation plan. In fact, one high level local official perceived some statements as a semi-threat, particularly an implication that the military would be asked to devise a plan if the local community under the acting mayor did not act quickly. Be it as it may, a provisional evacuation plan was devised by local groups in the next few days.

The second instance was when a tentative agreement had been reached by local officials that a city wide mandatory evacuation plan should be developed. There is agreement that OEP advised against the plan by advancing reasons showing its impossibility. However, there is disagreement on whether more than advice was involved. Some local officials interpreted some specific interaction between OEP and community leaders as direct involvement in local decisions which they felt was outside the prerogative of a federal agency. Whether more than advice was offered or not, it is a fact that the city wide evacuation scheme was changed to the eventually implemented quadrant plan.

It is clear that in both instances, some local officials and OEP were not seeing the situation in the same way. What one party visualized as advice was perceived as direct involvement in local decision making. The issue is more than a semantic one for it bears on the crucial point for disaster planning that what people believe to be so, is so insofar as consequences are concerned.

Discussion and Conclusion

The Louisville emergency situation could have been a model case of an almost totally successful evacuation procedure, both from the standpoint of the community involvement and the organizational interrelationships. The former was quite successful; there was a mandatory evacuation of over 4,000 citizens from one section of Louisville with a minimum of difficulties. While the police had expected considerable trouble in this area, or as one officer noted, "less than 100 percent cooperation," no problems arose. There were only three arrests in or near the mandatory evacuation area²; concerning the lack of cooperation expected, the police officer continued, "we were in error." The evacuation itself went off with only minor difficulties.

Organizational difficulties were a different matter. The Louisville situation was characterized as one of extremely slow onset of threat, yet the two key organizations, OEP and CD could not coordinate themselves. Why? Many reasons could be advanced for the problem but we would suggest it had nothing to do with the personal competence, personality make up, or particular officials involved in the Louisville situation. The same sort of difficulty typically arises in most disasters of any magnitude, although it may take on some particular coloring because of a specific disaster situation. Conflict arises between extra-community and local groups due to different perceptions of each other's functions, domains and legitimacy. This in turn is related to past history and past experiences.

In Louisville, far before the chlorine barge situation developed, the local CD office had conducted monthly meetings of approximately 20 emergency relevant organizations. This was part of the normal everyday activities of the community. Officials from each of the participating organizations got to know officials from other organizations on a personal level. Lines of communication became regularized; role relationships were formalized. CD emerged as the coordinating agency and leader of the local groups. Where the normal activities were replaced by one of emergency and crisis, the formal and informal relationships that had been developed over time, were carried over into the new situation. Thus, CD set up an EOC at City Hall, continued its leadership function, and was accepted by other community organizations as the legitimate group for coordinating emergency activities.

Yet there were other organizations involved in addition to the local ones. Due to the barge accident occurring on the river, the barge lodging in the dam gates, and the hazardous nature of the chlorine gas, federal agencies became involved. The three most prominent were the Corps of Engineers, the Coast Guard, and the Environmental Protection Agency. To coordinate these agencies, OEP entered the picture. It set up its own EOC at the Federal Building. But most local organizations, especially CD, did not know what OEP's role was supposed to be in emergencies. One official noted that "OEP was a new concept." The local organizations had never worked with OEP before. The OEP officials were strangers to the local officials, having arrived from Atlanta, St. Louis, Washington, and other cities. They were, in a sense, the proverbial "outsiders." These federal people posed a threat to the local organizations. "Problems of misunderstanding," as one local official called it, arose. "It was the federal versus the local level", another official commented. The crux of the differences revolved around the role of OEP. Civil Defense felt that they themselves could handle the situation and that OEP was "federal intervention." OEP conceived of itself as "assistance where requested."

The differences between the two organizations were exacerbated due to the nature of the emergency situation. Two factors, the salvage operation and chlorine retrieval, and the community evacuation were involved. And, importantly, the evacuation decisions rested to a great extent on the technical operations. OEP coordinated the technical operations and was in control of the information flow. Given the hazy nature of its domain and its not-yet solidified role, OEP felt it was better suited than the local CD to help in the formulation of the evacuation plans also. It tended therefore to deal with organizations other than the local CD. Under its one umbrella, OEP

thought it could better coordinate the total relief effort of salvage and evacuation. This created friction, as we have seen, as the existing local structure of emergency relevant organizations was disregarded.

It may be hypothesized that in a different type of community emergency, one in which the technical aspects play a much less important role, OEP might not be seen as involved in local decision-making functions, but would restrict itself to an advisory capacity to the already-existing local disaster effort. Also, with the passage of time local community organizations may become more cognizant of OEP and its now diffuse role made clearer. On the other hand, DRC studies elsewhere suggest that there is an almost inherent clash built into the simultaneous operation of local and extra community groups in a stress situation.

To summarize, in normal, everyday times federal and local community disaster organizations are not integrated into a functional working relationship. When a crisis occurs, these two levels are forced together and gaps show up, most notable at the level interface, the federal OEP and the local CD. Conflicts and misunderstandings ensue and the total crisis-containment effort suffers.

NOTES

1. This is not true in the strictest sense of the word. Actually there were a number of critical periods, probably four at a minimum. The first period occurred when the barge broke loose and the possibility existed that the chlorine tanks might rupture if the barge sank, ran aground, or struck another object. The second period of criticality occurred when the barge shifted and resettled in the dam gates due to the fast currents. The third period occurred when the actual stabilization and securing of the barge took place. The final period occurred when the chlorine was being pumped out of the tanks and the possibility existed that a change in the barge's center of gravity might cause it to break in half. The first two of these periods occurred without warning and were over before an awareness of what had transpired became known. The third period was one of slow onset being based on the salvage timetable established by the parties concerned with engineering the recovery operation. This period was considered the most critical and brought on the evacuation. The fourth period was also one of slow onset but whose criticality was considerably diminished by the stabilization procedure and the removal of some of the chlorine. This period was essentially conceived as an engineering problem and brought little response from emergency organizations.

2. The three arrests recorded at this time represented a large drop from normal arrest levels. The three arrests were for: public drunkenness; automobile hit and run; and sightseeing and failure to obey a police officer.