Local Government Hazardous Materials Control -- A Program That Works

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ABSTRACT

Louisville and Jefferson County, Kentucky has a comprehensive program for hazardous materials control based on realistic regulation and outstanding cooperation between industry and local government agencies. The success of the program is more noteworthy because the area of 700,000 population covered involves the major city of Louisville, a heavily populated unincorporated County area, and 93 small incorporated cities.

The political support for the program was generated after a series of hazardous materials incidents including a runaway chlorine gas barge, a sewer explosion and chemical contamination of the communities' major wastewater treatment plant.

Louisville and Jefferson County have the following elements in the program:

- A totally integrated emergency response program which features outstanding coordination and cooperation between police, fire and other emergency response agencies which has resulted in uniform incident reporting (911), coordinated response to hazardous materials incidents through dispatched response teams, and annual training exercises.
- In 1985, a hazardous materials ordinance was developed by a joint industry/government task force which provides for immediate spill reporting to local government, submission of spill plans for all hazardous materials users (over 1,600 submitted and approved), responsibility for clean-up, inspection of facilities and appropriate penalties for violations.

- Louisville and Jefferson County was one of the first large urban areas nationally to submit a complete plan meeting SARA III requirements. (Submitted formally on September 16, 1988).
- The County has a comprehensive ordinance concerning the siting of hazardous waste facilities.
- The pretreatment program managed by the Metropolitan Sewer District has resulted in a 70% reduction in heavy metals in the wastewater flow since 1980.
- A comprehensive monitoring program for spill detection, explosivity, and illegal discharges into the sewers and streams is in place.

This paper will discuss the elements of the program in Louisville and Jefferson County and the cooperative process used that assured the success.

KEYWORDS: Emergency Response, Hazardous Materials Ordinance, SARA Title III, Spill plans, water quality monitoring, wastewater pretreatment.

INTRODUCTION

In recent years national and international attention has been focused on the problems associated with the transportation, use and disposal of hazardous materials by our society. New environmental regulations and programs to address the problem have been forthcoming. SARA Title III (The Superfund Reauthorization and Amendment Act) provided for a national program of spill reporting, emergency response planning and disclosure by industries of the use and storage of certain hazardous chemicals.

Louisville, Kentucky experienced a series of incidents that led to the development of a comprehensive community-wide program for dealing with hazardous chemicals that far exceeds the requirements of SARA III. This program development had a difficult birth.

- In 1971 a barge loaded with chlorine broke loose from a tow at the McAlpin Locks and Dam on the Ohio River at Louisville. The barge ultimately came to rest and hung precariously on the dam. The potential for a chlorine gas

release and emergency was great. Thus, a substantial portion of western Louisville was evacuated. Ultimately, the barge was secured and a tragedy averted, but the event heightened the community's awareness and preparation for transportation related incidents. As a hub for rail, barge, truck and air transport, the community faced a significant need for better hazard analysis and coordinated emergency response.

- In March of 1977, unknown chemicals were dumped in a demolition area which drained into a combined sanitary/storm sewer in Louisville, Kentucky. Six miles of sewers and the Morris Forman Wastewater Treatment Plant were contaminated. The chemicals were later identified as highly toxic Hexachlorocylopentadiene (Hexa) and Octachlorocylopentene (Octa). The sewers and treatment plants were clogged with sticky blue masses of the substance. The Metropolitan Sewer District (MSD)'s new secondary treatment plant was shutdown for a cleanup that took 2-1/2 months. During this period, up to 105 mgd of untreated wastewater was discharged to the Ohio River.
- In 1978, following a major street cave-in, it was found that approximately 1-1/2 miles of 36-inch concrete sewer had been corroded, with almost complete removal of the sewer invert in long stretches of the sewer. Additionally, a pumping station that serviced the affected line suffered similar corrosion problems. The cause of the corrosion was traced to a large chemical company that manufactures organic and inorganic pigments for paint and plastics industries. After sampling the company's effluent, it was found they were discharging effluent with a pH of 2.0 for several hours each day.
- On Friday, February 13, 1981, an explosion of significant proportions occurred in the sewer system of Louisville, Kentucky at 5:13 a.m. The cause of the explosion was a discharge of approximately 10,000 gallons of hexane, a highly flammable chemical used as a solvent by a local food processing plant.

The material was released due to equipment failure, and an existing separation basin proved to be inadequate to contain the large volume of hexane. In addition, neither the Fire Department nor other emergency response agencies were notified of the spill. As a consequence of the explosion, more than 2.5 miles of public sewers were destroyed and an area encompassing 40 city blocks was affected. Over $45,000,000 in damages resulted from the explosion.

- In August of 1984 a freakish series of five chemical spills occurred which again aroused public concern about reporting requirements, emergency response and the inability of local governments to regulate the situation.

As a result of these and other incidents a program was developed for the regulation of hazardous materials in Louisville and Jefferson requiring unprecedented intergovernmental cooperation between emergency response agencies. Further the dialogue between the emergency response agencies and local industry was essential to the success of the programs.

The program in Louisville and Jefferson County has the following elements:

- A totally integrated emergency response program which features outstanding coordination and cooperation between police, fire and other emergency response agencies. Uniform incident reporting (911), coordinated response to hazardous materials incidents through dispatched response teams, and annual training exercises are some of the key elements.
- In 1985, a hazardous materials ordinance was developed by a joint industry/government task force which provides for immediate spill reporting to local government, submission of spill plans for all hazardous materials users (over 1,600 submitted and approved), responsibility for clean-up, inspection of facilities and appropriate penalties for violations.

- Louisville and Jefferson County was one of the first large urban areas nationally to submit a complete plan meeting SARA III requirements. (Submitted formally on September 16, 1988).
- The County has a comprehensive ordinance concerning the siting of hazardous waste facilities.
- The pretreatment program managed by the Metropolitan Sewer district has resulted in a 70% reduction in heavy metals in the wastewater flow since 1980.
- A comprehensive monitoring program for spill detection, explosivity, and illegal discharges into the sewers and streams is in place.
- Louisville was selected as a test installation site for the CAMEO program (Computer Aided Management of Emergency Operations) and the system has been implemented.
- A program featuring public information and access was developed...jointly funded by government and industry.
- The University of Louisville was selected as a statewide center for waste minimization. The center works closely with local government agencies and industry who use and support the program.

EMERGENCY RESPONSE PROGRAM

Historically, Louisville, as most other large urban areas, has approached emergency response coordination on an ad hoc basis. Each agency controlled its own operations and attempted to interface with other agencies at the scene of emergencies. Inter-agency communication was often poor, and individual agencies many times would assert their statutory authority and unique roles in a manner which interfered with other agencies' ability to perform effectively. Also there were inadequate local, state, and federal regulations regarding spill reporting and industry responsibility.

In 1979 the community took a first step toward meaningfully addressing the problem with the adoption of Annex X to the city-county Emergency Operations Plan. This annex provided for coordinated operations in hazardous materials incidents, including the designation of the ranking fire official as the on-scene commander. It provided the basis for adopting an all-hazards approach to emergency management, and the development of an integrated emergency management system.

Although a long history of intergovernment cooperation existed in the emergency response community, the series of chemical spill incidents in 1984 revealed that there were gaps in the program, a lack of understanding of the roles of some of the agencies, and a lack of understanding by industry about their responsibilities with regard to notification (who, when?) and on-site coordination.

The events of the summer of 1984 provided the impetus for change. Louisville Mayor Harvey Sloane was alarmed over the number of spills involving hazardous materials, but more so, over the negligence of some companies in failing to notify emergency agencies of spills.

There had been five large spills in just the month of August. In view of the delay, and in some cases complete failure, of the company to notify emergency response agencies of those spills, the Mayor issued a public appeal to all companies that handle large amounts of hazardous materials to immediately evaluate and review safety and reporting procedures.

Secondly, he challenged the leaders of these companies to advise and work with a public/private task force brought together to develop safety programs, notification procedures, and other regulations that would create a safer environment for the use and storage of hazardous materials.

The Task Force included representatives of Louisville and Jefferson County's leading industries which use hazardous chemicals, including duPont, Rohm & Haas, Chevron, Ralston-Purina, General Electric, ARCO, Celanese, and Porter Paint. In

addition, emergency response agencies including police, fire, emergency medical services, health, and disaster response agencies were represented. The sewer district was represented because of the large number of incidents involving the sewers and storm drainage system.

The Mayor asked for solutions within two months, but the Task Force worked for nearly a year. After eleven months of debate and spirited negotiation, legislation was prepared and enacted into law by the Louisville Board of Aldermen and the Jefferson Fiscal Court.

As a result of the Mayor's Hazardous Materials Task Force recommendations were implemented which filled the gaps and greatly broadened the scope of the local programs for dealing with hazardous materials.

The program features a coordinated emergency response effort that links appropriate agencies. The coordinated response is all the more significant because the parties involved include 23 fire departments, six police departments, the Health Department Hazardous Materials Unit, the Louisville and Jefferson County Metropolitan Sewer District (MSD), and the Jefferson County Hazardous Materials Response Team.

A basic incident response will bring out the fire department with jurisdiction, the MSD response unit (with monitoring and communications equipment) and the Health Department's Hazmat unit. The on-scene commander can quickly bring other resources to the site as needed.

In the County areas other Hazardous Materials Response Team members may also respond routinely. The ranking fire officer is always the on-scene commander although he may pass on responsibility to MSD or the Health Department to oversee environmental clean-up if no hazard exists.

One unique procedural change, essential to getting positive cooperation from industry regarding spill reporting, was the agreement by the fire departments and other emergency response team members to "stage" their response to a hazmat call if no

obvious emergency was evident at the site. Industry was concerned that the new regulation would require them to report spills where no hazard exists.

At certain large chemical plants, the fire department response to a call is an automatic two alarm level. A two alarm response, when not needed, can disrupt plant operations. The fire departments agreed to stay outside the plant gate until a first responding officer can investigate whether or not the "troops" should come on it. Industries now routinely send a representative to the plant gate to interface with the emergency response team.

Much improved cooperation and credibility between emergency response agencies and industry now exists.

The joint response teams respond to over 500 hazmat incidents per year in the Louisville/Jefferson County Metropolitan area.

HAZARDOUS MATERIALS ORDINANCE

The Mayor of Louisville and the Jefferson County Judge/Executive are the chief executives of the two large urban governments charged with protecting the public health and safety of the 700,000 citizens who reside in Jefferson County. Harvey Sloane has had a unique perspective and played a historic role in the process of building a coordinated hazardous materials prevention and response system.

As Mayor in 1984, he was outraged by the rash of hazardous materials pills. As the community's first citizen and chief political leader, he acted. Serving as a catalyst and convenor, he called upon business leaders, emergency responders, city, county, state and federal officials to come together and address this serious problem in a cooperative, coordinated manner. While there was initial distrust and turf protection, the Mayor used his personal powers of persuasion to insist that no one leave the room until there was mutual commitment to a collaborative solution. He insisted that government alone could not solve the problem, that this was a challenge that truly required a public-private partnership.

In 1985, he became the first sitting Mayor to be elected to the chief executive position of the county government, the County Judge/Executive. Thus he was given the opportunity to build upon the successes of his Mayor's Task Force on Hazardous Materials and the city-county Hazardous Materials ordinance. The community's commitment to becoming a national leader in this important field became a fully inter-governmental, inter-agency and public-private team.

The innovations and success of 1987 and 1988 were products of this partnership, and the foundation of the program for hazardous materials response was the work of the Mayor's Task Force in 1984-85.

The key element of the process and the primary reason the Task Force was successful was the unprecedented level of government/industry dialogue and cooperation.

The Mayor's Task Force worked for over a year to develop the ordinance. For a long period of time weekly breakfast meetings of the subcommittees (all balanced between industry and government representation) were held to "hammer out" issues of concern. There were many such issues. The breakfast meetings were "skipped" by local news media thus frank discussions could take place.

A local government attorney was kicked out of one subcommittee's meetings to allow non-legal dialogue to take place.

Behind it all was the steadfast position of Mayor Sloane that a realistic ordinance that would protect the community be forthcoming.

The final product of these efforts was a model Hazardous Materials Ordinance that required:

- Immediate spill reporting to local government emergency response agencies with penalties for late reporting or failure to report. Air releases also require immediate reporting.
- The submission and approval of a Hazardous Materials Use and Spill Prevention Plan (HMPC Plan) that has many requirements which exceed SARA III/Tier II

information. Over 1,600 plans have been submitted and approved under the ordinance. All emergency response agencies have a complete set of these plans for industries in their jurisdictional area.

- Joint facility inspection. All high risk locations are jointly inspected by the fire department with jurisdiction, MSD, and the Health Department. The industry representatives were very pleased with the joint inspection provisions to minimize disruption at the plant site due to multiple inspections.
- Training and education programs concerning spill reporting and mitigation for employees at regulated industries are required.
- Penalties for violations are clearly defined. Cost recovery of public agency unusual response and cleanup costs is provided for.
- The Louisville and Jefferson County Metropolitan Sewer District (MSD), which has countywide authority and the strongest enforcement hammer under state/federal environmental laws, was designated as the administering agency...providing uniform implementation and enforcement...another major concern of industry representatives.
- An Appeals and Overseers Board was appointed to overview the implementation, hear appeals of fines/penalties by industry, and advise the City, County and MSD about changes needed in the ordinance.

This ordinance is far more comprehensive in its scope than SARA Title III and state requirements in Kentucky. After three years it is totally implemented and has proven very effective. There is outstanding compliance with spill reporting requirements, better cooperation between industry and government emergency response agencies, and a much greater comfort level that the citizens of the community are protected by a responsible system.

News media coverage of spills, once inflammatory, now only reports "big" incidents. Those reported have a negative focus only if the industry has violated the reporting requirements, has been obviously negligent, or there has been a breakdown in the system by the public response agencies.

SARA III PLAN

Louisville and Jefferson County submitted a SARA III plan on September 16, 1988, that exceeds SARA III requirements. The plan was actually completed in July!

Many of the same industry/government persons who negotiated the successful hazardous materials ordinance were involved with the SARA III effort.

Louisville's plan is very comprehensive and detailed. In many areas it reflects the interagency cooperation necessary to have a successful emergency response program in a multi-jurisdictional, large urban area. For example the training section designates training levels and responsibilities for all responders. The agency with the most expertise has the responsibility for training not only their own personnel but also those of other agencies.

EPA and FEMA officials have acknowledged the Louisville plan as a model for others.

COMPREHENSIVE SITING ORDINANCE FOR HAZARDOUS WASTE FACILITIES

Recognizing the changes in hazardous waste management that are resultant from federal legislation, Jefferson County developed and adopted a comprehensive hazardous waste facility siting ordinance. The purpose of the ordinance is not to prohibit such facilities but to insure that appropriate technical, legal, and financial parameters are met if such a facility is to be located in the county. Local zoning ordinances are usually inadequate to provide for the level of technical review and opportunities for citizen review required to successfully site a hazardous waste facility. It is believed that the ordinance will allow siting of well conceived facilities yet protect

the community from those types of facilities that have created problems in the past and are now Superfund cleanup sites.

INDUSTRIAL WASTE PRETREATMENT

Because many of the dramatic hazardous materials incidents in Louisville were sewer related, the agency responsible for meeting EPA pretreatment requirements, the Louisville and Jefferson County MSD "got a jump" on many other large cities.

The program is now fully mature and has proven very effective. Some elements of the program such as spill plan requirements and enforcement procedures were included in the Countywide hazardous materials ordinance. The government/industry relationship established in the pretreatment program also helped resolve some touchy issues. MSD was selected as the implementing agency for the HazMat ordinance largely because of the good working relationship it had developed with industry.

The effectiveness of pretreatment in reducing concentrations of metals coming into MSD's sewerage treatment facility is dramatic. The plant influent concentrations for cadmium, chromium, copper, lead, nickel, silver, and zinc are down by an average of 72% from peak concentrations occurring between 1980 and 1982. Similar reductions have also occurred in plant effluent with a reduction of 78% during the same period, resulting in much less discharge of potentially hazardous metals into the river environment. Filtercake has also shown dramatic decreases in concentrations for the same metals by 70% overall.

The quality of sludge generated from a wastewater treatment plant is dictated by the quality of influent to the plant and the amount of pollutants removed from the liquid stream before effluent discharge. Pollutants such as heavy metals can limit sludge management alternatives and are most effectively controlled by regulating the industries that discharge them. Reducing the amount of these pollutants in the sewer system reduces their concentrations in the sludge. Improved sludge quality increases the potential for sludge management alternatives.

Objectives of the industrial waste pretreatment program were to regulate the industrial discharge of pollutants to a level compatible with the plant operation and the quality of sludge required for selected management alternatives. Another very positive impact is a reduction in the release of potentially hazardous pollutants into the aquatic environment.

Louisville's pretreatment program has successfully achieved the desired results.

COMPREHENSIVE MONITORING PROGRAM

The foundation for a comprehensive program of hazardous waste management on a community-wide scale is imbedded in the monitoring programs. Originally part of the MSD pretreatment program, the monitoring effort is now much more comprehensive. MSD is responsible for the monitoring programs. The program elements are as follows:

- Basic flow/parameter monitoring of large industrial users (self monitoring requirements by industry are also included)
- Explosivity monitoring at high risk locations in the combined sewer system and at certain pumping station and treatment plants.
- Randomly scheduled monitoring for "unusual" characteristics at manholes downstream from concentrations of industrial/commercial hazardous materials users.
- A baseline stream monitoring program for all streams in Louisville and Jefferson County (25 stations). This program was started in January of 1988 in cooperation with the U.S. Geological Services and with a partial grant for a baseline biological study from the Virginia Environmental Endowment.
- Fully equipped monitoring crews who support efforts of other emergency response agencies at hazmat incidents monitoring runoff to streams and sewers as well as explosivity.

This comprehensive monitoring program provides assurances that spills and other pollution sources will be detected, responded to, and managed with the least possible risk to the public and minimal environmental damage.

CAMEO INSTALLATION SITE

A Computer Aided Management of Emergency Operations (CAMEO) program, which was designed to help emergency planners and first responders safely handle chemical accidents, has been installed in Louisville. This system was developed by the National Oceanic and Atmospheric Administration (NOAA) in conjunction with the United States Environmental Protection Agency. Louisville is one of the first cities in the nation to use this computer program. The Louisville and Jefferson County Disaster and Emergency Services (DES) agency is responsible for this program. Other agencies are to be linked in.

This program is especially useful in predicting consequences of air releases and has proved helpful in several potentially hazardous situations in the past year. Eventually it will interface with an interagency computerized mapping and geographic information system now being implemented by public agencies and utilities in Louisville.

WASTE MINIMIZATION PROGRAM

Due to cooperative efforts between the University of Louisville and state and local government, a hazardous materials waste minimization center was established at the University.

The center works directly with industries (state-wide and local) and others to help with industry specific waste minimization problems, information dissemination to the public, sponsoring of seminars on hazardous materials management and waste reduction and other related activities.

CITIZEN INFORMATION PROGRAM

Recognizing that the credibility of the programs developed depends greatly on public perceptions an evolving and improving public information program -- again a joint government/industry effort -- is in place. Citizens and news media can access SARA III information about industries as well as other information about hazardous materials easily and without hassle. Brochures, PSA's, a speaker's bureau and slide/narration programs have all been developed and circulated.

FUTURE EFFORTS

Any program dealing with hazardous materials in today's environment must be dynamic to be successful. New EPA regulations and public demands for reducing risk are fueling further efforts in Louisville.

All public agencies (Public Safety, DES, MSD, Health Department, Jefferson County Air Pollution Control District) are reporting to the SARA III Executive Committee about their efforts to use and react to SARA III disclosure information and their progress in implementing new program responsibilities dealing with hazardous materials. Current efforts include:

- County government is exploring a household hazardous materials disposal program.
- Permits are being evaluated for several new hazardous waste facilities attempting to locate in Jefferson County.
- Implementation methods for the new EPA stormwater program are being assessed.
- A computerized mapping/data base for emergency response agencies, "loaded" with spill plan information, is being developed.

One of the challenges of the times for government at all levels is to respond to public concern and scientific evidence about the negative impact of the use and disposal of hazardous chemicals on the environment. In Louisville and Jefferson County a comprehensive program has been developed that addresses these concerns at the local level in a very effective manner.