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BINGHAMTON DECONTAMINATION PROJECT

The Binghamton State Office Building forms a prominent central tower within a governmental building complex shared by the State of New York, the County of Broome, and the City of Binghamton. The State Office Building, completed in the spring of 1973, rises 18 stories (260 feet) above street level and has two sub-surface levels. Thirty-three State agencies normally occupy the State Office Building, with approximately 700 employees.

On Thursday, February 5, 1981, the Office of General Services was notified of an electrical fire and subsequent power failure at the Binghamton State Office Building. The fire occurred at approximately 5:30 A.M., when the building was unoccupied with the exception of a Security Guard and a Stationary Engineer.

OGS emergency engineering staff responded, as well as a Department of Transportation oil spills engineer, to find that the fire had been extinguished. Since the markings on the transformer indicated that the coolant oil contained polychlorinated biphenyls (PCBs), the engineering staff initiated necessary action in accordance with the applicable regulations of the Federal Environmental Protection Agency and the New York State Department of Environmental Conservation. New England Pollution Control, a company which maintains certain expertise in the area of hazardous material removal, arrived mid-afternoon and, outfitted with protective suits and respirators, began to clean the floor of the transformer room.

Of the office buildings in the complex, only the State Office Building had suffered damage from the fire, and OGS representatives arranged with county officials to cable electricity from the county building to the State building. The on-site personnel also arranged to borrow a transformer from New York State Electric and Gas. The transformer that was to be loaned would provide heat and electricity so that an efficient clean-up could be accomplished. The next morning personnel continued to establish a temporary electrical system, cleaning of the mechanical equipment room proceeded, and DEC was contacted as to the proper disposal of the hazardous materials. A complete inspection of the building revealed that a fine soot had been distributed throughout all areas of the upper floors. The estimated time required for clean-up was extended from several days to several weeks. It was also determined that the New York State Department of Health would arrange to more fully characterize the chemical content of soot and air samples.

Later that day there was a meeting at which representatives of the City of Binghamton, Broome County, New York State Departments of Health, Environmental Conservation, Transportation, Labor and the Office of General Services were present. During the meeting, an OGS on-site coordinator was named as well as contact persons for all agencies that were to be involved in the clean-up operation. There was also a Command Post set up in the Police Bureau of the City building to establish a central communications and coordination center for control of the project.

At the same time, OGS personnel were identifying and arranging for alternative office space for agencies displaced from the State Office Building. Space in the Marine Midland Bank building, City Hall, the County Building, and the nearby State Armory were located.

Early Saturday morning, the County Health Commissioner received the test results. The air samples contained 6-62 micrograms of PCBs per cubic meter and the soot registered PCB levels of from 10 to 20 percent. The County Health Commissioner concluded that the air was relatively clean in light of the fact that levels were below the allowable standards promulgated by the Federal Occupational Safety and Health Administration (OSHA). The tests results were relayed to OGS in Albany along with samples to be tested further by the State Health Department. All personnel working within the building continued to wear respirators and air sample tests were repeated on a regular basis.

On Sunday, February 8th, New England Pollution Control began the clean-up of the overhead areas in the mechanical-equipment room, so that area could again be used to house the power distribution system. It was determined that the soot remaining in the building could best be removed by vacuum and a contractor was retained and started the clean-up of the upper floors on Monday the 9th. Further power was provided to the building when electricians connected some corridor lighting and one outlet on each floor. Test results from Galson Technical Services indicated that the levels of PCB contamination in the air samples were still well within OSHA standards.

On Monday, arrangements were made for temporary work locations for State employees to conduct business. Thursday, the day of the fire, Friday and Monday were the only days that State business was hampered due to loss of work space.

Early during the week of the 9th, Department of Health staff inspected the building, and arranged for the collection of additional soot and air samples. The DOH team also presented OGS with a Safety Plan which was approved and implemented. This Plan noted that requirements promulgated by the Occupational Safety and Health Act provided the basic safety program for the operation. The Plan addressed security, showers and change areas, safety equipment, respiratory protection, and sampling schemes.

By mid-week, the collection of blood samples from all personnel who were working in or had entered the building was initiated. An industrial hygienist from Galson Technical Services was hired to instruct workers and supervisors about proper procedures when handling the contaminated material and to advise on the proper use of respirators, protective clothing and cleaning equipment. The Galson representative studied the Safety Plan and then observed the cleaning operation to ensure that proper procedures stated in the Plan were being implemented.

It was also during that week that the cleaning of the mechanical equipment room was completed and necessary temporary electrical connections accomplished. The temporary power distribution system was now ready for installation.

By Friday, the Department of Health reported finding PCBs in all soot samples tested, indicating that the contamination was widespread in the building. Based upon the findings of the Health Department tests, soot samples from the basement and parking areas were taken. At that time, New England Pollution Control, was asked to expand their professional workforce to meet the increased cleaning requirements.

The State decided, during the week of February 16th, that based on the test results from both the Department of Health and Galson Technical Services, the basement parking area would also be treated as a contaminated area. While waiting for the definitive results of the tests of the samples taken from the parking garage, precautionary measures were taken. Revisions to the Safety Plan were made so that personnel would no longer enter and exit at the parking garage level. By that week, CECOS International Inc., a licensed waste disposal firm that had been hired by the State, had removed 230 barrels of toxic waste from the building for disposition in a secure and certified landfill.

Repeat medical examinations were performed on cleaning personnel and others who were determined to have been exposed to any contaminated material.

On Thursday, February 19th a representative from the National Institute on Occupational Safety and Health reviewed and approved the Health and Safety Plan and trained two OGS personnel to act as safety observers through-out the clean-up effort.

On the week-end of February 21st, Department of Health testing confirmed that PCB contamination had been found in samples taken from the parking garage area. DOH recommended that the area be cleaned. The next day, clean-up of the parking garage area began. After consultation with DEC and New England Pollution Control, a treatment system for the water discharged from the building was constructed. OGS made plans for the erection of such an on-site system.

On Wednesday, February 25th, the State Health Department informed OGS that their (DOH) analysis firmly indicated that in addition to the previously detected levels of PCBs, the soot also contained lesser amounts of dioxin and dibenzofuran. Upon being apprised of this information, it was determined that a request for proposal (RFP) to clean the building would be developed and submitted to chemical pollution specialists. The RFP would be developed by the Office of General Services working in cooperation with the State Health Department, Labor Department, and the Department of Environmental Conservation, as well as appropriate Federal agencies and acknowledged experts.

On Thursday, February 26, a press conference was held by the Office of General Services and the State Department of Health at the Empire State Plaza in Albany. At that time, the Commissioner of OGS announced that clean-up operations were being concluded at their present stage pending the development of the RFP to ensure that not only PCBs, but tetrachlorodibenzodioxin (TCDD) and tetrachlorodibenzofuran (TCDF) were also removed during the cleaning process. The cleaning of the parking area and the work on the power distribution system were permitted to be completed. All other efforts would be concentrated on the removal of debris and then would cease on the evening of Friday, the 27th.

Since the duration of the clean-up effort was not able to be definitively determined, OGS began considering long-term alternative office space in which to continue the business of government. State agencies had been relocated to temporary quarters elsewhere in Binghamton after the initial three day interruption, but the Office of General Services began working with those agencies to secure more permanent quarters to cover the indeterminate period that the State office building would be closed. The vacant Christopher Columbus School was subsequently leased from the Binghamton City School District and would be renovated and made ready for occupancy by the various State agencies. The building would be known as the Binghamton State Office Building Annex.

Also at the request of OGS, the Department of Health assembled a panel of internationally renowned chemists and physicians, who would meet in early April in New York City. The panel would focus on six questions:

- What level of human exposure to the various chemicals identified is acceptable?
- What kind of testing should be done to monitor the success of any decontamination effort?
- Which chemical compounds should be focused on?
- Should guidelines be established separately for different routes of exposure (i.e., dermal, ingestion, inhalation)?
- Should all areas of the building be subject to the same guidelines regardless of differences in potential human exposure?
- What safeguards are necessary to prevent exposure in non-contaminated areas?

OGS construction personnel continued to remodel, repair and replace needed heating and plumbing units, paint and generally ready the Annex for occupancy. By the week of March 23rd, the first offices were opened at the Annex and agencies were advised as to the dates of their moves. Eventually, 20 of the 33 State agencies in Binghamton would be allocated office space at the Annex, with the remaining 13 continuing to use office space in the other parts of the city.

After a spot inspection of the garage area by the Broome County Health Commissioner, OGS was informed that traces of soot were identified on some of the pipes. OGS instructed New England Pollution Control cleaners to redirect their efforts to the immediate cleaning of the pipes in question. The cleaning was expected to take about two weeks since it was being done by hand and each pipe would be tagged as it was cleaned.

By the last week in March, the membership of the expert panel was finalized. Its members included physicians, chemists, toxicologists, epidemiologists, engineers, and representatives from various federal and state agencies, as well as Canada.

On Wednesday, April 1, 1981, the Office of General Services announced that it had hired one of the more experienced firms in the nation to advise the agency in its efforts to develop clean-up procedures for the Binghamton State Office Building. The company, Versar Inc., a Virginia-based engineering and research firm, has specialized in working with toxic and industrial chemicals and has, for the past nine years, been a major contractor for the United States Environmental Protection Agency (EPA) and developed many of the present regulations and disposal methods for PCBs. As consultant, Versar would be responsible for developing a Health and Safety Plan, Ventilation Plan, and Preliminary Clean-up and Testing Plan.

During the first week in April Versar's representative, as well as members of the expert panel toured the building. They recommended that further biological and chemical testing be done. Furthermore, at the State's request, the National Institute of Occupational Safety & Health agreed to act as lead agency in the implementation of the Health Surveillance and Safety Plan. On Wednesday, April 8th, Versar scientists arrived to further assess the situation and discuss plans for preliminary clean-up.

Two days later, State and local officials formed an Intergovernmental Coordinating Group. The purpose of the group was to bring together, in a formal setting, key state & local personnel so there could be a direct and effective exchange of ideas and information as well as an updating on the status of the clean-up and testing projects. On Monday, June 8th, the first meeting of this group was convened in Albany.

So that preliminary clean-up work could commence, Versar developed a system designed to control the flow of air into the building by drawing it through vents and into a series of filters that would remove pollutants and toxic substances, including dioxins and PCB's before venting the air to the outside. OGS began to accept bids for this system, the Air Filtration Pollution Control System (AFPCS), on July 23rd.

Two weeks later, as part of the Health & Safety Plan, OGS awarded the contract for the construction of an entrance module which would control all passage into and out of the building. The module would be equipped with showers, decontamination areas and appropriate receptacles for the disposal of contaminated protective clothing.

On Tuesday evening, August 18th, 1981, a public meeting was held in Binghamton to answer citizens' questions regarding any aspect of the State's plans or activities relating to the State Office Building. The Health & Safety Plans and the Air Pollution Control Plan were presented and discussed. The following week, a meeting was held with the editorial board of the local newspapers to inform them of the State activities and to clarify any pertinent matters.

Toward the end of the month of August, the Office of General Services completed an Environmental Impact Assessment in accordance with the State Environmental Quality Review Act. The assessment concluded that the preliminary clean-up of the Binghamton State Office Building would not have any significant adverse effect upon the environment. Reasons given in support of that determination were as follows:

- Clean-up and ventilation are remedial actions to mitigate existing potential adverse environmental effects. Air exhausting from the filtration and pollution control system on the roof of the building is intended to be as clean as the existing atmosphere in the Binghamton area.
- Analysis of the plan to ventilate the Binghamton State Office Building by the Departments of Health and Environmental Conservation indicated that initial projected air emission dispersion levels will be many times below that approved by the U.S. EPA.
- The disposal of solid waste resulting from the preliminary clean-up will be in accordance with approved methods for handling contaminants.
- All water used in various segments of the clean-up will be filtered and tested to verify compliance with standards before discharge to the municipal sanitary sewer.
- Detailed and intensive sampling methods will be employed to monitor changes in contaminant levels and to ensure worker and community safety. Under the direction of the Occupational Physician, comprehensive medical examinations will be provided for workers before, during and after exposure to the contaminants.
- The General Health and Safety Plan will govern the conduct of all operations. Standard Operating Procedures (SOP) will address all safety concerns. These SOPs will be written by Versar, or the contractor, and will be reviewed by OGS and Versar and other State agencies as appropriate.
- Upon completion of this action, a full assessment of the condition of the State Office Building will be made. Based on this assessment, alternatives for further clean-up of the facility will be considered. Any subsequent plan of action will be subject to a separate and full State Environmental Quality Review assessment.

In September, equipment was moved into the building for tests of the filtration system which was installed on the roof of the building. By the end of the month, the completed entry module arrived and was connected to the building through the corridor which had previously been constructed.

The Request for Proposal for preliminary clean-up of the building was developed, put to bid and awarded. Allwash, Inc. of Syracuse, N.Y. was the successful low bidder. The preliminary clean-up will consist of three activities: the first, completing the initial clean-up within the building; the second, removing soot from ceiling panels and surfaces above those panels; and third, cleaning elevator shafts and mechanical chases.

On Tuesday, October 13th, the Intergovernmental Coordinating Group met in Binghamton. Also present at the meeting were members of the local media. Presented at the meeting were status reports on the air filtration - pollution control system, the installation of the entrance module, continued testing, and the medical surveillance plan.

By month's end, a DOH physician had begun to hold regular Thursday and Friday office hours in Binghamton for the purpose of counseling and advising any person having health-related questions or any inquiry concerning the Department of Health's medical-surveillance program.

In early December, tests performed on areas of the basement parking garage were analyzed. The area was determined to be usable and parking was allowed in those areas.

The on-going testing of the venting efficiency of the Air Filtration Pollution Control system was completed. Results of the extensive testing showed that the system works effectively.

In discussions with the County consultant, additional monitoring procedures were developed. After review of all data and a general announcement, the venting of the building through the AFPC commenced February 1, 1982. Preliminary clean-up has commenced in phases and follows the procedures contained in the applicable plans.

The air conditioning system, which is crucial to the clean-up, has been successfully restored to service. At present, the building temperature is being maintained at between 50 and 60 degrees to allow cleaning personnel dressed in several layers of clothing to efficiently proceed with the clean-up.

The elevator system has been restored in phases over the past few months so that the system is currently providing service that fulfills the requirements of cleaning personnel.

All building systems are now operating at levels that are conducive to the overall cleaning operation.

Maintenance and operations personnel test and ready the building systems each day before the initial entry to the structure. Then four cleaning "teams", each consisting of 11 personnel - including one foreman, begin their work. Since no personnel are allowed to remain inside the building for longer than 4 hours at one time, the cleaning crews work shifts of approximately 3 hours and 50 minutes each. In addition to cleaning personnel, there are 4 State inspectors in the building during each shift. They insure that the work already completed and the work in progress is in accordance with the clean-up standard.

As a means of both basic cleaning and preparing the building for more intensive cleaning, all furniture and equipment has been removed from all floors. The larger items have all been vacuumed and moved to the sub-basement area of the building. Many smaller items have been compacted and are destined for disposal in a secure landfill.

Removal of draperies, carpets and blank ceiling panels is also being accomplished in order to provide for the most meticulous clean-up. These materials, as well as loose paper and desktop items, have been removed and placed in 55 gallon steel drums or are being stored temporarily in the sub-basement until such time as they are taken to a secure landfill.

Since the building, like all buildings, is not perfectly square, the ceiling pieces must be returned to their former location. As pieces are cleaned, each is coded in a way that will allow for its re-use. Although this process is a time consuming one now, it assures the saving of great amounts of time and money in the future.

A vitally necessary project was and is the positive identification of all areas within the building. Since it is crucial that all personnel speak precisely and in common terms when speaking of the building, all offices and spaces within the building have been identified in a systematic, and certain manner. The scheme for location identification has resulted in the highest degree of control of information regarding clean-up accomplishments.

There are two areas of the clean-up operation that represent major tasks in their own right. The first is the cleaning of heating/cooling terminal boxes which includes the opening of the box, removal of insulation, the cleaning of the box and its closing. Given the restrictions placed upon clean-up personnel by both the required protective clothing and the various small parts of the terminal boxes, the cleaning of such boxes takes a relatively long time. There are a total of 820 perimeter boxes with another 220 installed in the ceiling.

The second is the cleaning of approximately 285 light fixtures on each of the 18 floors. It takes approximately 90 minutes to prepare one fixture for cleaning - that is to take it down, open it and take out the lighting element. It then takes over 2 hours to thoroughly clean the fixture and the tracks in the ceiling that hold the fixture. The time consumed equals roughly 5,100 fixtures times an average 4 hours per fixture, or 20,400 man hours for this activity alone. Because these fixtures are metal and therefore very cleanable and the fact that they are custom designed for this building, the cleaning rather than replacement of these fixtures is extremely cost effective.

The State's constant demand for the highest quality work requires, in every respect, a methodical and meticulous process that cannot and must not be hurried. The result is that the clean-up must take a relatively long period of time, but, more importantly, it will be thorough.

Since the contamination within the building affected the records kept in file cabinets, the State Department of Health advised that it would not be feasible to attempt to clean the documents. Accordingly, the decision has been made to eventually destroy all paper records. However, the Attorney General has requested that we locate, segregate and temporarily store in the sub-basement significant documents relating to pending litigation of state agencies. All documents scheduled for destruction have been shredded or baled and, if they are of a confidential nature, their destruction by shredding has been confirmed by witnesses. All contaminated materials - in whatever various forms are being transported to and disposed of at an appropriate disposal site. As of this time 1,200 cubic yards of bulk waste and 1,377 sealed 55 gallon drums have been removed to a high level waste disposal site.

Both the 9th and 16th floors of the building have been completely cleaned and serve as sample areas, while also providing personnel with the opportunity to experiment with different testing and cleaning techniques.

The following is a listing of additional activities and accomplishments, which help illustrate the amount of work being performed inside the building as of the week ending August 27, 1982:

- *inventory of all equipment and records in building
- *removal of all furniture and office equipment to sub-basement
- *opening of duct shafts to allow for cleaning
- *shredding and baling of all paper materials
- *removal of all carpet
- *removal of all bathroom and corridor accessories
- *installation of temporary core lighting, on floors 3 through 18
- *access and removal of exhaust ducts from rest rooms
- *preliminary vacuuming of exhaust duct shafts on mens' room side
- *removal of secondary duct work in basement
- *removal of insulation from terminal boxes in basement
- *removal of records and shelving from DOT storage room in basement
- *3rd through 17th floors have been prepared for vacuuming and washing
- *cleaning of perimeter terminal boxes on 18th floor
- *cleaning of ceiling terminal boxes on 18th floor

Under present scheduling and projected performance, it is anticipated that the preliminary clean up phase, now in effect, will be complete by the end of fiscal '82-'83.

Research presently underway by our consultant will aid in determining the level of cleanliness that can be attained for various construction materials, items of equipment and furniture within the building. This information is being provided, along with risk assessments, to the New York State Department of Health for the decision as to the appropriate criteria for reoccupancy. The standards that will form the basis for reoccupancy of the building have not yet been finalized.

It should be noted that since all items which presently enter the Binghamton State Office Building are considered contaminated, no reconstruction has been attempted as a result of the existing dismantling for cleaning purposes. The building presently operates under a temporary power distribution system. Most areas within the building are lighted with temporary lighting systems and major portions of the heating and air conditioning distribution system have been removed.