

An aerial, black and white photograph of the U.S. Department of the Interior Main Interior Building. The building is a large, multi-story structure with a complex, stepped design. It features numerous windows and a prominent central section with a series of vertical columns. The building is surrounded by other city buildings and a street with some traffic visible in the lower left corner.

U.S. DEPARTMENT OF THE INTERIOR

MAINTAINING
INDOOR AIR QUALITY
DURING THE
MODERNIZATION OF THE
MAIN INTERIOR BUILDING
SEPTEMBER 1, 2006
PURSUANT TO HOUSE REPORT NO. 109.465
ACCOMPANYING H.R. 5386

Executive Summary

This comprehensive report addresses the maintenance of indoor air quality (IAQ) and employee safety and health during the modernization of the Main Interior Building (MIB) in Washington, D.C. This report is provided pursuant to the request by the House Appropriations Committee as specified in House Report No. 109.465 accompanying H.R. 5386.

The primary purpose of the MIB modernization project is to upgrade and improve the aged mechanical, electrical, plumbing, and life safety infrastructure for the benefit of all Department of the Interior (DOI) headquarters employees and visitors.

The National Business Center's Modernization Program Office (NBC/MPO) is the DOI liaison with the General Services Administration's (GSA), Potomac Delivery Team, for the Modernization Project. GSA is responsible for the execution of the construction contract for the multi-phased project with a funding level of \$220 million. Grunley Construction Company was awarded the general construction contract by GSA in August of 2001. Originally planned for nine years at the time the contract was signed, the modernization project is now scheduled to be completed in March of 2012. The extended timeframe is primarily due to delays that occurred as a result of the events of September 11, 2001.

In managing this construction project, NBC/MPO has overcome significant challenges which have provided numerous important lessons which have been incorporated into the project, thereby contributing to the project's continued successful execution. The NBC/MPO expects that additional issues will arise which could impact modernization, including conformance with design and building code changes that have evolved throughout the history of the project.

DOI has met many of the challenges to protect our employees' safety and health at all times during the project. In order to, DOI has established a structured approach to managing indoor air quality and environmental concerns. Some of the key elements of this progressive approach include:

- A thorough review of contract specifications and the Indoor Air Quality (IAQ) plan led to the contractor submitting their implementation plan in January of 2003 to incorporate the "Guidelines for Occupied Buildings Under Construction" by the Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA). This modification to the contractor's IAQ plan provides a measurable requirement for compliance of indoor air quality standards and occupant safety and health during construction;

- Objective reviews by third party observers from the Environmental Protection Agency (EPA), National Institute of Occupational Safety and Health (NIOSH), and the Occupational Safety and Health Administration (OSHA);
- Continued improvement of efforts to establish and maintain negative pressure between occupied space and construction areas, including enhancements to further increase barrier protection implemented in Phase III of the modernization project (the project's current phase);
- Weekly random testing for particulate and organic compounds and daily testing for asbestos particulates in certain areas of the modernization project, and quickly testing and evaluating all other reports of unusual odors or dust reported in areas outside of the construction zones; and
- A complaint tracking log that provides for a review of worker safety problems and appropriate corrective actions.

The following report provides a synopsis of the project, with particular attention to the specific items referenced within the House Subcommittee's request: responses to the NIOSH assessment of February 3, 2006; processes for communication with employees. In addition to these specific requests, this report provides preliminary results from a NIOSH on-site visit to the MIB which took place during August 14-17, 2006.

Overall, you will find the project approach reflects the Department's genuine concern for its employees. This report contains detailed descriptions of the actions taken and approach to effectively manage indoor air quality at the MIB that led NIOSH to conclude during the most recent third party review that **although there are some additional actions to be taken, there are no significant occupational hazards, from a health and safety perspective, for the building's occupants during this phased modernization project.** Although the Department recognizes that managing indoor air quality during the modernization project requires ongoing attention throughout the project, the recent NIOSH finding confirms that we are taking the appropriate steps to protect the health and safety of MIB employees and visitors.

BACKGROUND

Although GSA is responsible for the management of the modernization project, the Department and GSA have worked together since 1992 to plan for the modernization of the MIB. Since the very early stages of planning, the project was to be implemented in a multi-phased approach with continuous occupancy throughout the modernization effort.

The continued occupancy introduces many challenges and requires a higher level of adherence to safety requirements and an active employee communication program. The project was initially approved by the Congress in 1996 and preliminary design was completed in the same year. Funding for the first construction phase was provided in FY 2000 when Congress directed GSA to proceed with the first phase of construction. When the 2000 Appropriations Act was enacted into law, GSA tasked the architect and engineers to revise the outdated plans and designs to incorporate changes including updates to adhere to applicable building codes. Not all of the design changes requested by the Department were incorporated into the project design documents as a part of that revision and this has resulted in some project delays and resultant impacts on the building occupants, which NBC/MPO has tried to minimize..

SCOPE AND PROGRESS

The primary purpose of the MIB modernization project is to upgrade and improve the Main Interior Building's aged mechanical, electrical, plumbing, and life safety infrastructure for the benefit of employees and visitors. Consistent with the project's overall purpose, several safety measures have been incorporated into GSA's contracts. Some of these measures are listed below.

- Provisions requiring fire resistant barriers between the construction zone and occupied space.
- GSA has retained a full-time industrial hygiene firm to provide onsite daily air and bulk sampling (for asbestos) of both the work areas and the occupied areas adjacent to areas where work is being performed. All samples collected in the occupied areas, with one exception in October of 2002,¹ have yielded results below the OSHA permissible exposure limits.

¹ During routine testing of on-going work in October of 2002, an elevated level of asbestos was discovered in the MIB's basement level. Exercising extreme caution, the Department closed the building for three days while exhaustive independent testing was performed to ensure the building was safe for occupants. Although the building was reopened after three days, the affected basement area remained closed for several weeks while abatement actions were completed to ensure occupant safety.

- Transport of hazardous materials through occupied areas is not allowed, except in limited areas and after hours. All transport activities must follow strict safety precautions, which are identified in the contract documents.
- In keeping with the Department's "green building initiatives" an Environmentally Preferable Products and Services (EPPS) Plan has been prepared by the contractor and approved by GSA.
- A IAQ Management Plan was prepared by the contractor and approved by GSA. It includes requirements to describe means and methods for preventing migration of dust, air pollution, and odors. An example of one prevention measure is the use of temporary ventilation systems in work zones which are filtered and exhausted to the outdoors.
- The contractor's Safety Officer conducts regular site inspections to ensure compliance with all applicable safety regulations. The General Contractor is required to disconnect and isolate the HVAC system for each wing under construction to restrict air circulation outside of the construction area. Additionally, the wing under construction is separated from the remainder of the facility with rigid barriers and polyethylene sheeting.

Throughout the project the NBC/MPO has monitored GSA's oversight and the contractor's performance. At the insistence of the National Business Center (NBC), GSA retained a consultant to provide an independent evaluation of the design and construction of the installed systems.

At the Department's urging, GSA has also purchased additional testing equipment and established weekly random testing for levels of airborne particulate and volatile organic compounds. Summary results of air quality testing are made available to building occupants and members of the public on the NBC/ MPO website at www.doi.gov/modernization/air. Improvements in GSA's contract administration have also allowed NBC/MPO to reduce disruptions to occupants. The CQM contract was re-competed and the Department participated as a member of the selection panel. The re-competed contract award occurred in 2004. A marked improvement in the construction change order process has occurred since the contract went into effect. At the government's urging, a change in the project management of the demolition subcontractor has improved the project performance and decreased building disruptions. Additionally, increased barrier protection has been constructed during Phase III, the project's current phase, to increase air quality protection above and beyond the required level. This increased protection includes double dry walling and sheathing of the

construction zones to separate it from the occupied areas and to further increase the negative pressure between the two areas.

Through these and other measures, the management of indoor air quality at the MIB has been made even more effective and has provided a comprehensive system to ensure occupant health and safety protection through proactive prevention, detection, response, and communications related to such matters.

Lessons learned through the first two phases led to modifications to the construction coordination and sequencing that have made a significant improvement during the demolition and abatement phases. The creation of a more logical project progression and closer management of sub-contractors has ensured schedule adherence going forward and improved coordination and reduced impacts on employees that occupy the building.

Phase III of the Modernization Project, the project's current phase, has begun with further increased attention to the safety and health of the MIB occupants as outlined in the NIOSH recommendations of February 3, 2006. These findings and specific responses to the NIOSH recommendations can be found later in this report.

NBC Project Management and Communication

Communication and coordination with the various Department Bureaus and Offices has been a very important part of this project. Extensive coordination is especially critical in light of the need to relocate some building occupants prior to the start of each project phase and return occupants to the newly renovated space at the completion of each phase and to protect occupants and minimize impacts throughout the modernization. In addition, management of the project has required staging construction in a way that allows the cafeteria, library, and other public spaces to remain open and accessible. MIB Occupants have been impacted by schedule delays since the beginning including the four year delay in securing the funding and the five month delay in the re-occupancy after the first phase. In an effort to accelerate the project, the Department agreed to re-occupy the sixth wing as the floors became available. This approach proved to be ineffective as the contractor failed to meet the schedule milestones and the resulting “punch lists” were quite lengthy.

Noticeable improvements have been implemented as the result of changes in the sequencing and coordination of the construction, moves, and re-occupancy. GSA and the contractor have accepted that in all future project phases, renovated space will be re-occupied only after the entire tower is complete. This approach will reduce work in occupied areas and, in turn, assist in lowering the potential risk of exposure of occupants to odors, noise, dust, etc. This improvement has contributed to the successful completion of Phase II on schedule.

Improvements in communications with building occupants have been implemented through the development and use of a comprehensive communications strategy specifically for the modernization effort. One of the key actions within this comprehensive approach is continued updates at the bi-monthly Tenant User Group (TUG) meetings. Some 26 meetings addressing project status and updates have taken place since October of 2002. The TUG users group forum is an effective means of addressing the NIOSH recommendation to “create a committee with DOI and GSA management and employee representatives to address building related complaints,” These meetings inform occupants about the overall status of the project and allow an open forum for discussion of their specific concerns. In conjunction with the TUG meetings, individual Bureau and occupant information briefings are provided upon request. Such briefings have been provided at the request of the Solicitor’s Office and the National Park Service in recent months. Moreover, a brief newsletter is distributed periodically and placed electronically on the NBC/MPO website. Six of these newsletters can be accessed directly from the Modernization Program Office’s website at www.doi.gov/modernization/newsletter. The most recent edition that was posted in July of 2006 describes recent improvements to enhance occupant safety and health conditions as well as announcements and dates for the upcoming Indoor Air Quality Forum and TUG meetings. Further, the establishment of weekly, “14-day look-ahead” meetings with GSA and the general contractor has provided better communication about upcoming

construction activities. During these meetings, which are open to all Main and South Interior Building occupants, project activities and plans which may potentially create disturbances for building occupants are highlighted.

Additionally, a bi-weekly meeting has been established to specifically address occupant concerns or other issues related to indoor air quality. This meeting, called the IAQ Forum is open to all occupants of the Interior complex and is announced through the local area network message system to ensure all building occupants are made aware of the planned meeting schedule and locations. An improved communications system was established to ensure each individual building occupant concern that is reported is researched and resolved. Since the institution of this approach in 2004, data indicates that 141 complaints or concerns have been raised. Each has been researched by GSA and/or the Department's industrial hygienist and resolved or closed after taking any applicable corrective action. This information is also made available for use during subsequent TUG user meetings or the IAQ Forum to maintain communication with building occupants.

NIOSH Recommendations from February 3, 2006

On February 3, 2006, NIOSH responded to a June 17, 2005 anonymous letter from a concerned employee requesting a Health Hazard Evaluation. The employee expressed concern that exposure to dust and chemical odors during the modernization project were potentially associated with neurological and respiratory problems. An on-site visit was not conducted by NIOSH while performing this evaluation. NIOSH responded based on telephonic interviews and written materials provided to them that included e-mails and other written materials. As a result of its evaluation, NIOSH made several recommendations. Each NIOSH recommendation is included below, followed by the DOI response to each one.

1. Adopt the recommendations in Good Practice Guidelines for Maintaining Acceptable Indoor Environmental Quality During Construction and Renovation Projects, focusing on ventilation issues outlined in the EPA assessment.

NBC has aggressively pursued the adoption of the guidelines for maintaining acceptable Indoor Environmental Quality for all of the occupants of the Interior complex. Highlights of the actions taken include the following:

- Identified the specific controls for construction/renovation projects and added them to the contract scope during the January 2003 contract modification. This contract modification specifically directs the contractor to adopt the guidelines in the Sheet Metal and Air Conditioning Contractor's National Association, Inc. "Guidelines for Occupied Buildings Under Construction." These guidelines are considered the premier benchmark in the construction industry for Indoor Air Quality controls.
- The general contractor has identified and provided a representative to address all Indoor Environmental Quality issues. GSA is actively pursuing DOI's requests for increased involvement by the general contractor in TUG forums.
- The contractor's corporate Safety Officer conducts regular site inspections to ensure compliance with all applicable safety regulations.
- High Efficiency Particulate Air (HEPA) vacuums, damp mopping, and dusting are utilized in the occupied zones to supplement an already aggressive facility custodial regimen. Additionally, large fans (1,000 cubic feet per minute) with HEPA filtration and exterior exhaust are utilized in the construction zone.
- A fire wall separates the majority of the construction zones from occupied spaces.
- Negative pressurization is achieved during all asbestos abatement activities. HEPA filtration is utilized during all abatement and construction events.

- The random testing program has been expanded to regularly measure levels of airborne particulates and volatile organic compounds. Summary test results are made available to building occupants and members of the public for review on the NBC/MPO website at www.doi.gov/modernization/air.
- Maximize the use of “Green Materials” through contract specifications, to require that all materials used during construction should be those deemed to be low or zero o-zone depleting products.
- The HVAC system for each wing under renovation is disconnected and isolated from the HVAC system servicing occupied areas.
- Temporary ventilation systems are established and utilized in work zones that are filtered and exhausted outside of the building.
- A proactive approach to communications with the occupants of the Interior Complex has been put into effect. Various mechanisms have been established and are utilized to ensure timely communications with occupants. These include, but not limited to: bi-monthly Tenant User Group Meetings, bi-weekly Indoor Air Quality Forums, 14-day Look Ahead meetings, network based messages, a periodic Modernization Newsletter, and a Modernization Project website (www.doi.gov/modernization). These comprise a comprehensive communication approach.

2. *Streamline communications (including Material Safety Data Sheet information on all products in a timely manner, completing the website links, and providing data regarding environmental sampling).*

NBC’s progressive communications strategies have led to increased exchange and interaction with occupants of the Interior Complex regarding modernization activities. One of the key elements of this proactive approach that provides continued project status and updates is the use of the bi-monthly Tenant User Group meetings. The TUG users group forum is an effective means whereby the Department has addressed the NIOSH recommendations to enhance communications with building occupants. A combination of communications mechanisms have been established to ensure timely communications with occupants regarding occupant concerns, project status, and planned project activities which may potentially create disturbances for building occupants. These include, but are not limited to: bi-monthly Tenant User Group (TUG) meetings, bi-weekly Indoor Air Quality Forums, 14-day Look Ahead meetings, network based messages, a periodic Modernization Newsletter, and a website. In addition to these communications methods, individual Bureau and occupant information briefings are provided upon request.

An improved communications system was established to ensure each individual building occupant concern that is reported is researched and resolved, as applicable. Since this approach was adopted in 2004, our data indicates that 141 complaints or concerns have been raised, researched, and addressed. Each concern is researched by GSA and/or the

Department's Industrial Hygienist and resolved or closed after taking any applicable corrective action. These efforts provide information that is shared during subsequent TUG meetings and/or the IAQ Forum to "close the communication loop" regarding issues that are raised by building occupants.

Additional testing equipment is being utilized as part of a weekly random testing program that regularly measures levels of airborne particulate and volatile organic compounds. Summary results of this testing are made available to building occupants and members of the public on the NBC/MPO website at www.doi.gov/modernization/air. These screenings are used to monitor and recommend improvements to the engineering controls utilized by the contractor, while at the same time minimizing the occurrences of construction based disruptions in occupied areas. Consistently, the data indicates that particulate levels have been within the regulatory guidelines for occupied buildings during construction.

3. Respond promptly to worker health complaints

The NBC/MPO has implemented a procedure whereby each occupant reported complaint is researched and any necessary corrective actions are taken. As stated previously, this improved communications system was established to ensure each individual building occupant concern that is reported is researched and resolved, as applicable. The outcomes of these complaints are reported not only to the individual occupant, but also briefed to employees that attend the IAQ Forum and the TUG meetings. These measures have provided a comprehensive system to enhance communications with building occupants related to such matters, including timely response and follow through related to complaints.

4. Create a committee composed of DOI and GSA management and employee representatives responsible for addressing building related complaints such as described in the Building Air Quality Action Plan. This committee should meet on a regular basis to facilitate communication and resolution of worker health and safety issues.

As described previously, the Department has begun to utilize the TUG meeting for the purpose of communicating modernization project related events or issues that may be of interest to employees of the Main and South Interior Buildings. When the modernization project began, the GSA Project Office was added to the regular TUG meeting attendees, which is now comprised of members from the NBC/MPO, and employee occupants from the Interior Complex. This committee meets bi-monthly to address concerns and discuss upcoming modernization activities with the potential to create disturbances for occupants of the MIB. Further, the establishment of weekly, "14-day look-ahead" meetings with GSA and the contractor is providing improved insight into upcoming construction activities. These meetings, which are open to all Interior Complex occupants, also address activities in the Modernization Project of potential interest to occupants.

NIOSH Preliminary Finding: On-Site Visit of August 14-17, 2006

At DOI's request, NIOSH Inspectors visited the MIB to evaluate and inspect the Modernization Project from August 14-17, 2006. While a final report will not be issued for at least 60 days, a verbal debriefing was conducted with DOI, GSA and the general contractor officials. During this debriefing, the following findings and recommendations were discussed:

Finding

- The NIOSH review of the Modernization Project conducted during August 14-17, 2006, revealed that there are no significant occupational hazards from a health and safety perspective for the building's occupants.

Recommendations

- The Department, along with its partners at GSA, should develop a comprehensive Risk Communication Program for the occupants of the MIB.
- GSA should improve contractual oversight by ensuring that the contract specifications and agreements are followed. This oversight should specifically address:
 - Increased oversight to assure continual contractor compliance with the January 16, 2003, contractor plan submission in which the contractor agreed to adhere to the "Guidelines for Occupied Buildings Under Construction" by the Sheet Metal and Air Conditioning Contractor's National Association, Inc.;
 - The development of a contract check list and controls to ensure enforcement; and
 - An increased evaluation and testing program on the general contractor's construction operations.

- The contractor should increase efforts to comply with contract requirements and protect construction worker health and safety, in the following areas:

Contract Requirements

- Ensure compliance with SMACNA “Guidelines for Occupied Buildings Under Construction”;
- Ensure consistency of all barriers between occupied areas and construction zones;
- Ensure appropriate walk-off mats are in place at all construction zone entry/exit ways;
- Research all unplanned air pathways, especially at the seam points against existing surfaces of the building; and
- Ensure negative pressure zones are maintained between construction zones and occupied spaces.

Construction Worker Safety

- Improve construction worker training on the proper use of protective equipment;
- Ensure workers understand the importance of IAQ practices including, but not limited to, closing doors completely after departure from construction areas and avoid eating in construction zones; and
- Ensure reasonable accommodation for language barriers within all signage and training.

Conclusion

The Department of the Interior's MIB is uniquely a part of the American cultural fabric. Listed on the National Register of Historic Places, its architecture reflects and symbolizes the Department's mission of protecting and providing access to our Nation's natural and cultural heritage. Under the National Historic Preservation Act, as amended, the Department of the Interior has the responsibility to develop information concerning professional methods and techniques for preserving, restoring, and maintaining historic properties.

With this comprehensive and phased modernization of this historic structure, DOI demonstrates its continued commitment to valuing its employees, who have occupied this building since 1937. Through improvements to the aged mechanical, electrical, plumbing, and life safety infrastructures, this modernization project strives to ensure a safe and enjoyable place for Interior's employees to work and showcase to our visitors.

The National Business Center continues to partner with the GSA and its general contractor to maintain indoor air quality ensuring compliance with IAQ Guidelines outlined in "Guidelines for Occupied Buildings Under Construction" by the Sheet Metal and Air Conditioning Contractor's National Association, Inc.; communicating regularly through our various occupant meetings, communication vehicles, and websites; and continuing our aggressive testing of indoor air to ensure occupational safety and health during all phases of the modernization project. Through the comprehensive measures described in this report, the management of indoor air quality at the MIB has been made even more effective and has provided a comprehensive system to ensure occupant health and safety protection. A complete approach to proactive prevention, detection, response, and communications related to such matters is now in place and functioning effectively to protect occupants from modernization related disturbances, detect any issues, respond to complaints, and ensure ongoing communications with occupants.

We were pleased with the recent visit from the NIOSH inspectors, knowing that they share our concerns for employee and visitor health and safety. Although NIOSH found **there are no significant occupational hazards, from a health and safety perspective, for the building's occupants during this phased modernization project**, the Department remains committed to managing indoor air quality throughout the modernization project. This recent NIOSH finding does confirm that our efforts have been successful in protecting the health and safety of both employees and visitors to our Interior Headquarters Complex.

The Department of Interior remains fully committed to protecting the safety and health of our employees and visitors. Additional comments or questions regarding the information provided in this report can be directed to Douglas J. Bourgeois, Director, National Business Center at (202) 208-6254.