Decontamination in the Midst of Active Research and Administrative Operations

Scott R. Brown
Battelle Columbus Laboratory Decommissioning Project

ABSTRACT

Many decontamination projects are performed in buildings where ongoing operations have ceased and corresponding occupants have vacated the facilities. In the case of the Battelle Columbus Laboratory Decommissioning Project (BCLDP), remediation has to proceed simultaneously with, directly adjacent to, and literally in the middle of, ongoing research and administrative operations. This has resulted in some additional planning, operational, and interfacing challenges not found in more traditional decontamination projects. Keys to successfully meeting these challenges include planning properly by taking into consideration the "extra" time and resources needed, communicating openly with facility occupants during all phases of the project, and being flexible and responsive in addressing occupants' concerns as much as practical.

INTRODUCTION

The Battelle Columbus Laboratory Decommissioning Project (BCLDP) is a Department of Energy (DOE) Environmental Management (EM) project to decontaminate and decommission (D&D) 15 privately owned buildings in central Ohio. Remediation began in 1989 and, when completed, will allow use of all facilities without any radiological restrictions. Most of the buildings and equipment items became contaminated as a result of various government sponsored nuclear research activities dating back to the 1940s. The cost of the project is shared between DOE (90%) and Battelle Memorial Institute (10%).

Battelle's Building KA-4 and Building KA-A are two of the 15 facilities and are still being used for non-nuclear research and office operations. D&D work to date in the BCLDP has been performed primarily in buildings where ongoing operations have ceased and corresponding occupants have vacated the facilities. This is a common scenario in D&D and environmental remediation projects throughout the United States. Cleanup work can proceed without major concern for other operations utilizing the facilities. However, in the case of BCLDP's Building KA-4 and Building KA-A, cleanup has had to proceed simultaneously with ongoing research and administrative operations. This has resulted in some additional planning, operating, and interfacing challenges. The remainder of this paper will explore these unique challenges and the effective methods instituted to meet them.

ADDITIONAL CHALLENGES TO THE DECONTAMINATION PROCESS

First, a criterion needs to be developed to determine what really constitutes an "additional challenge" to the decontamination process. For this paper the following criterion was used:

- *Additional Challenge* - an item that resulted in an activity being performed that either would not have been performed at all, or would have been performed at a significantly reduced effort if the building had been vacated and not had operations ongoing during remediation.

The additional challenges can be grouped into three categories presented below, along with descriptions of the challenges themselves:

Planning Challenges:

1. Using historical records, process knowledge, and available data, specific rooms are identified as being radioactively "suspect" and are included in the project. A challenge at times is to determine the internal organization responsible for these rooms so items can be removed and schedules for relocation and remediation properly coordinated.

2. Many rooms and items identified as being suspect are in use at least partially for research or administrative operations. These rooms are properly rendered completely unusable when decontamination activities are initiated. At times, this "squeezes" organizations out of money making space. It is a challenge to plan for and accommodate the many requests for accelerated room remediation and return for unrestricted use.

3. Some rooms to be remediated are located in the middle of plush, well-furnished, and highly populated facilities. A planning challenge is to mobilize remediation equipment and personnel while minimizing the impact on the surrounding operations.

Operating Challenges:

4. It is to everyone's benefit if decontamination can be performed without relocating active functions. A challenge is to identify those "low-impact" remediation activities that can be performed while laboratories and offices remain occupied.

5. A major remediation activity is the removal of contaminated drain lines from the buildings. A challenge is to remove these lines while keeping active the intersecting uncontaminated drain lines originating from ongoing research activities remaining in the building.

6. The nature of the work in Buildings KA-4 and KA-A is such that decontamination may be performed in rooms literally surrounded by occupied offices, laboratories, and hallways. A constant challenge is to effectively isolate remediation operations from these adjacent activities.

7. In many instances, it first appears that active operations will need to be moved to allow for effective remediation. A challenge is to develop and apply "in-situ" characterization and decontamination techniques to prevent expensive relocation of operating laboratories.

8. In practice, most of the time the only practical alternative is to relocate some functions to comparable facilities. A challenge is to integrate this activity into the overall operation of the BCLDP.

Interfacing Challenges:

9. As previously mentioned, many decontamination efforts are surrounded by other research and

administrative operations. It is a challenge to perform remediation and implement associated safety and operational controls in areas directly adjacent to individuals who have limited knowledge of radioactivity and/or decontamination operations.

10. Another "co-location" challenge for the BCLDP is working adjacent to research operations that are not conducive to remediation and construction type work.

METHODS TO MEET ADDITIONAL DECONTAMINATION CHALLENGES

Methods instituted that were effective in meeting the additional challenges are listed below and numerically correspond to the 10 previously presented items.

Planning Methods:

1. Utilizing building diagrams and other organizational information supplied by the internal facilities department is the first step in determining ownership or occupancy of specific rooms. Personal contact is then made with individuals managing and working in targeted rooms. After a period of negotiation, plans for remediation are agreed on between both parties, preventing "surprise" remediation work crews showing up in the middle of a laboratory experiment or other important task. As much as possible, remediation is planned to coincide with operational down or slow times, thus minimizing the financial burden on the impacted organizations.

2. Priorities of the research operations are accommodated as much as possible. Many of these operations can't afford significant down time. A list of critical equipment in suspect rooms is developed and survey, decontamination (if necessary), free release and relocation of these items are scheduled as a priority. Requests for schedule acceleration to return an entire room for unrestricted use must often times be denied due to factors such as planned neighboring remediation work, Independent Verification Contractor (IVC) schedule, and restoration activities. However, plans have been implemented that allow for acceleration of specific building floors being released for unrestricted use.

3. In mobilizing decontamination personnel and equipment, a key item is communication with surrounding occupants on remediation plans. Then both parties can plan the most efficient and least impactful methods of moving equipment and personnel into the work areas. Some of these methods include moving large equipment items after normal working hours and placing protective coverings (particle board, plywood) over plush carpeted surfaces.

Operating Methods:

4. The most common activity able to be performed in occupied areas is removal of contaminated drain lines. Drain diagrams are obtained or developed so the exact rooms to be impacted can be identified. Occupants are then contacted by the remediation team and the activity is discussed, including the safety measures to be used. A schedule is agreed upon, extra precautions taken to protect items in the offices, and every effort expended to complete the job as promised. Of critical importance is leaving the office as clean, or even cleaner, than before the performance of the task.

5. In Building KA-4 and Building KA-A, contaminated drain lines can not be removed without consideration for intersecting "clean" lines. These other lines are in use constantly and provisions need to be made to keep them operating. Drain line diagrams and knowledgeable facilities personnel are consulted to explore various options. In most cases, clean drain lines in use are rerouted to other clean lines, leaving the contaminated lines free to be removed. Occasionally, the active clean drain lines need to be shut down as rerouting activities are finalized. This is coordinated with building occupants and preferably performed on weekends.

6. The most effective point of isolation in the affected buildings is at the ends of hallways. During high-impact activities such as concrete wall and floor removal, soil removal, and underground drain line removal, access must be limited to only remediation workers. Communication with affected individuals concerning inaccessibility of the hallways, planning alternative passage routes, and installing barriers at the ends of hallways proved to be effective in limiting access to active areas. During certain room surface decontamination efforts, adjacent rooms and hallways were able to remain open. Room walls actually provided a sufficient isolation barrier that negated major impacts on the neighboring operations.

7. Normal procedure for Building KA-4 is to relocate operating groups that occupied suspect or contaminated rooms prior to beginning remediation. In the case of a Class 100 Clean Room occupying laboratory space above suspect underground drain lines, an alternative method was investigated because of the potential expense involved in moving this type of facility. The drain lines were internally cleaned and flushed. A snake like probe detector was then used to obtain direct survey measurements from inside the drain line in an attempt to verify the absence of contamination in the pipe and surrounding soil. In this specific instance, results from the probe indicated contamination above release limits remained at various locations along the drain line. The laboratory was then relocated and the entire drain line excavated and removed. Direct survey measurements of the drain line during removal correlated closely with the results obtained using the snake detector, instilling further credibility in this type of detection system. Under the BCLDP, a custom-made probe able to fit through many types of drain lines is currently being developed. The goal is to use this probe to free release other drain lines or to identify only specific sections for removal as opposed to the entire line.

8. Relocating active operations is treated just as any other piece of work in the project. Activity scopes, costs, and schedules were developed by individuals in the groups moving and BCLDP staff. This information was submitted to the local DOE office for approval and then added to the formal project baseline. BCLDP staff then assumed responsibility for managing facility relocation and modification tasks in addition to their remediation roles.

Interfacing Methods:

9. An important step is to assume that individuals from ongoing operations will have questions and anxieties once decontamination activities are scheduled near their facilities. This is the case in Buildings KA-4 and KA-A and questions are also routinely fielded from past occupants of areas scheduled for decontamination. Personal contact is made with impacted individuals by the BCLDP Project Manager or Field Supervisor prior to beginning remediation activities. The

nature of suspect or confirmed contamination is discussed along with what to expect operationally during remediation. Industrial safety and radiological protection hazards and controls are also discussed in as much detail as needed. Continuous communication takes place between the two parties during remediation efforts and this helps prevent "alarmist" type reactions from individuals.

10. Several types of activities not naturally conducive to decontamination and construction operations are located near the remediation areas. These include sensitive engineering research, clean room optics research, and administrative work by other Battelle organizations, government agencies, and a university function leasing some space. Special efforts taken to address these activities include coordination with affected parties on use of construction equipment, heightened attention to keeping dust and dirt levels low, and use of signs, postings, and physical barriers.

CONCLUSION

For obvious reasons, decontaminating a building while the facility still houses ongoing operations is not a preferred option. However, in the case of the BCLDP and perhaps other projects, it may be the only practical option. Two customers now need to be satisfied - the client funding the project and the owner/occupants of the facility. In situations like this, keys to success include planning properly by taking into consideration the "extra" time and resources needed, communicating openly with facility occupants during all phases of the project, and being flexible and responsive in addressing occupants' concerns as much as practical.