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THE AUTOMATED LAB

LESSONS LEARNED FROM THOSE WHO HAVE MADE THE
LEAP FROM MANUAL TO AUTOMATED PROCESSES



Laboratory Transition Planning

LABORATORY TRANSITION PLANNING

THE DEVIL IS IN THE DETAILS

By Healthcare Building Solutions Staff



Whether you are expanding into a new space, renovating, moving operations, consolidating laboratories, or decommissioning a facility, laboratory clean-out and relocation can be complicated and costly, and the stakes are very high; your research is your life's work, and it is irreplaceable. When relocating a laboratory, every detail is critical. As a result, many laboratories are including transition planners and move managers on their projects.

Context + value

Laboratories are relocated for many reasons: growth of program, funding changes, or renovation of the building where the laboratory is located. Planning the transition and move of a laboratory and its associated equipment is just as critical as designing the actual laboratory space itself. A typical laboratory relocation can take four to six months of planning before a single piece of equipment is moved. When you engage a lab transition planner to manage your move, your laboratory personnel can focus on their research while experts plan, prepare, and manage the logistical needs specific to the move.

Challenges

One of the most significant challenges in laboratory transitions is fully understanding the environment the laboratory will be moving into. Identifying the future location of shared equipment and ensuring that the proper mechanical, electrical, and plumbing infrastructure is in place must be clarified early on in the transition process. When you are relocating a cryogenic freezer with a decade's worth of research, something as trivial as the length of a refrigerator or freezer cord could be the difference between successfully relocating the specimens and losing years of data (Photo 1).



▲ Photo 1

Maintaining the integrity of ongoing research is one of the biggest challenges in laboratory relocations. It is important for the transition planner to gain the trust of the research investigator and the lab manager by meeting with them and their team to fully understand the nature of the research in order to develop a plan to relocate it safely and efficiently. Many times it involves providing specialized climate- and humidity-controlled environments for relocating live specimens such as cells, flies, mice, worms, or other animals.

Key considerations

Every research lab sets up core equipment unique to their research. Sometimes the equipment is used across the facility or even off-site at multiple institutions. The equipment could include machines needed for tissue culture, incubators that grow cells, and biosafety cabinets. When planning a move, it is critical to consider all the equipment being used, not just the equipment in a specific lab.

No one wants to move to a smaller lab space, but that is a fact of life with grant-funded research if grants are not renewed. No one wants to give up equipment or bench space. On the flip side, when a large research grant has been awarded, often multiple moves may be required before contiguous space is available. It is often difficult to find large enough temporary or “swing” space. This is especially frustrating for the researchers involved, as it requires moving more than once.

Lab transition planning requires ongoing monitoring and reassessment. Often a lab move will be planned and issues are uncovered when the move begins—for example, the lab manager on a recent move ordered new equipment and did not inform the move team. When it was delivered, much of the equipment in the lab had to be relocated to accommodate the new equipment.

Solutions

When undertaking a major laboratory relocation, proper planning can make the difference between a successful move and a disaster. Laboratory relocation is never routine. No two laboratories are alike, and they all have specific challenges that should be approached with care when attempting relocation. Below are some best-practice recommendations when relocating a laboratory into a new facility.



1. Identify your internal team.

The first step is to determine who will be involved with the move. It is important to involve all staff in the move process, but utilizing key persons within your organization to act as move captains can be helpful, particularly if

you have a large staff. Begin by meeting with your move committee and determine key dates in the move process to disseminate to the remainder of the staff. Establish a regular schedule of move meetings to keep everyone in the loop and to address issues as they arise.

2. Cold-storage transport is a delicate matter.

Many laboratories contain items, samples, or substances that must be kept in cold storage. For some of these items, it is not enough to simply move them in a truck with a freezer. Many items in laboratories have exact temperature ranges and requirements. To maintain the integrity of ongoing research during the move, it is important to put the proper cold-storage transport procedures in place. We recommend identifying a spare backup freezer in case something happens to the one being moved. We also recommend having dry ice on hand the day of the move.

3. Standard moving companies cannot handle sensitive equipment.

Many laboratories contain very sensitive equipment that can be very fragile and quite expensive. Many types of equipment require very difficult calibration procedures. It is simply a matter of common sense that you should spend the extra money to have a qualified company move this equipment without damaging it. This minor investment in protecting your equipment can save countless staff hours in the long run.

4. Pay special attention to chain of custody during relocation.

When planning the relocation of a laboratory, one must consider the transport of any items that require chain-of-custody documentation. This is a very common procedure in laboratories that handle evidence for law-enforcement agencies, but other types of laboratories may have chain-of-custody considerations as well. It may be necessary to arrange an escort to maintain the chain of custody for certain items during relocation.

5. Hazardous materials require special permits.

Most laboratories contain an array of items where substances are classified as hazardous materials by the Department of Transportation. It is important to consult authorities in order to obtain information about the legality of transporting the materials for your laboratory. In addition to the legal considerations of hazardous materials, there are safety considerations. Steps should be taken to ensure public safety when transporting potentially dangerous items.

6. Live animals are a special consideration.

Transporting live animals entails a unique set of challenges. Live animals need food and water, and they must be cared for during a lengthy transport. Most laboratories use hanging water bottles to provide their animals with water. These bottles invariably leak during transport. This can soak an animal's bedding and cause hypothermia or even death. In addition to this, animals in laboratories are often part of an experiment or scientific process. The animals themselves may require chain-of-custody documentation or other provisions to ensure the integrity of scientific research.

7. Contamination must be avoided.

The scientific output of any laboratory is only as good as the care and accuracy put into it. When relocating your laboratory, you must ensure that no items become cross-contaminated. Cross-contaminated items may negatively affect the outcome of your research years in the future.

8. Maintain instrumentation calibration.

Talk with the vendors and service companies that hold contracts on your instrumentation to find out what the particulars are regarding moves. Will they just calibrate/certify after the move, or do they need to crate, move, and uncrate instruments in order to indemnify you and guarantee your warranty?



9. Plan your route.

It is important to consider the route of the move and whether equipment will fit through doorways. When planning a recent move, our team knew that an oversized cryotank would not fit through the receiving door. We needed to find an alternative route, and we used an elevator that was under construction and had the elevator crew hoist the tank up the shaft (Photo 2).

LAB RELOCATION TIMELINE

Every lab relocation offers a unique set of requirements and parameters. Below is a timeline of key activities to ensure a smooth lab transition.

Two to Three Months Before the Move;

- Tour existing and new lab space with your lab transition planner and your architect.
- Develop equipment binders and review responsibility matrix.
- Dispose of old files, old chemicals, and old samples (animal or human).
- Notify vendors, the mail room, and other relevant parties that the lab has relocated.
- Secure keys and access to the new space.
- Identify who will pack the equipment and move it.
- Set a start date and timeframe.
- Establish timeline to shut down certain pieces to prepare for move.
- Send out RFP for specialist movers (chemical, equipment).

Two to Three Weeks Before the Move;

- Have move materials (boxes, tags) delivered to lab to be relocated for packing to begin
- Begin labeling/tagging. While tagging may seem simple, it is a critical step. Each piece of equipment gets a unique label which identifies the name of the lab, the phase of the move, and where it will be placed in the new space.
- The unique label corresponds to the plan, so movers can place items quickly and the lab technicians can begin to set up.
- Tour new space to ensure connections are compatible with incoming equipment.
- Identify move route for key equipment, checking door and height/weight clearances.

Day of the Move;

- On the day of the move, hopefully everyone is packed and the moving can begin.
- The chemical movers come in first and pack up the chemicals in special containers.
- Then, the general mover comes in and packs things that aren't yet packed.
- The last thing we put on the truck are the freezers because they need to be the first thing off, in order to be quickly put in place and plugged in.

Post-Move Follow Up;

- Tour vacated lab to ensure all items have been moved.
- Coordinate calibration of equipment.



▲ Photo 2

10. Document equipment specifications.

Documenting the specifications of all the equipment (i.e., weight, dimensions, electrical connections, temperature and humidity requirements, etc.) in binders and on the construction plans is a critical preparation step that easily saves money. For example, make sure that the new table can hold heavy benchtop equipment. If not, it becomes an expensive problem the day of the move. An incorrect electrical plug is expensive to fix on the day of a lab relocation.



11. Keep everyone informed.

Researchers love data and need to know not just the date of the move but also the date when their equipment will no longer be available. Decommissioning takes time, so make sure you are aware of how long each piece of equipment will take to move and place back in operation. Don't overlook the facilities managers in the building you are vacating and also in the one you are moving into. They are involved in many ways, from overseeing utilities connections/disconnections to providing adequate staging areas for packing crates and knowing when their loading docks will be needed.

12. Comply with requirements of GMP environments.

In heavily regulated environments, such as for pharmaceutical manufacturing and testing, there is also a requisite need for compliance with GLP/GMP guidelines. The need to meet regulatory compliance requirements both before and after relocation requires appropriate documentation and should be addressed in the early phases of the lab relocation planning process.

Tools

A lab transition plan requires a robust set of tools to ensure a smooth implementation and transition. The tools should be easy enough for anyone to use rather than a complicated proprietary program that requires extensive staff training. The tools should be able to display real-time snapshots of activities and decisions for the next day, for the next week, and for the coming month. The transition planner should be able to provide examples of the assessment tools, templates, checklists, work plans, and the "to/from" reports they use. If they are difficult to understand, it will make monitoring the transition that much harder.

Summary

A typical laboratory relocation can take four to six months of planning and is best handled by outsourcing to lab relocation specialists whose expertise can minimize the impact of moving on the laboratory's scientific mission and productivity. There is no question that moving is a stressful experience for everyone involved. Although it is important to plan and develop in advance the necessary schedules and checklists related to the physical move, it is equally important to consider the emotional component of the move. A good lab relocation manager will take the time to establish trust and respect with the entire team—principal investigators, technicians, administrative personnel, and the move team. Moving is usually associated with a new and exciting opportunity—taking the time to plan it correctly will make it a much more enjoyable experience.