Emergency Planning for Protection and Restoration of Services: Something We Should All Be Thinking About

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We hear daily in the media about disasters, large and small, natural and man-made. We witness injury, loss of life, and destruction of homes and businesses. We get estimates of the economic consequences from the loss of property and income. We empathize as we watch the efforts of victims to recover and return to normal lives. And yes, we all hope that it never happens to us.

However, as responses to a recent listserver inquiry of mine have illustrated, there's a chance that it could happen to you; that fire, flood, loss of utilities, or a similar scenario could affect your laboratory, leading to downtime and/or damage to instrumentation and infrastructure. How do you approach emergency planning to protect your resources and restore services? How do you ensure the safety of those who may have to deal with equipment and facilities in the aftermath of an emergency?

Listserver responses generally fell into two categories: (1) protection of equipment to prevent or minimize damage and (2) strategies for cleanup and restoration of services. Based on the experiences of those who responded, flooding seemed to be the most common emergency occurrence, followed by fire damage and electrical outages.

In terms of planning and protection, the suggestions included: (1) a phone tree for notification of lab personnel, (2) dissemination of early warnings to allow for safe shutdown of equipment, and (3) sand bagging of lab doors if flooding is expected.

Some power-related considerations: (1) generators to run sump pumps, (2) installing cables and control boxes raised off of the floor as much as possible, (3) UPS backup of instruments coupled with a system that notifies you of power failure, thus allowing time to come in and shut down instruments safely, and (4) shutdown at master shutoff switches to minimize damage from a power surge at the instrument when service is restored. It is also useful to (5) have plans for computer backup, including both data files and the customized software that you use to run instruments and analyze data.

For cleanup and restoration, (1) know where you stand in the priority list for help, both within your organization and with your instrument service providers. Will facility engineers be available to assist you, or will they be responding elsewhere first? Will maintaining service contracts put you higher on a priority list? In the case of smaller instrumentation, (2) can your vendor provide loaners until your equipment can be repaired or replaced? (3) If you have insurance, what is the age of your equipment, and are you sufficiently covered for replacement value?

Regardless of other support, in the event of an emergency it will likely be up to lab personnel to deal with the brunt of the recovery operation. Bear in mind that, in the event of a large-scale disaster in your area, your staff will be dealing with personal issues, too. These may range from just difficulty in getting to the lab to displacement from their homes; thus, support and understanding of their situations are paramount.

My thanks to Bill Anderson for a list of things to have on hand in the aftermath of flooding:

- Phone numbers for physical plant or a plumber to stop the water flow
- Well-labeled electrical panels to know which circuit breakers to switch off and, just as importantly, which ones NOT to switch off in a panic situation
- Plastic sheeting to throw over systems and workbenches
- Wet vacs or similar vacuum cleaners that can suck up water
- Electrical extension cords that won't electrocute the person vacuuming
- Fans to help dry out the lab
- Wedge blocks to hold doors open
- Absorbent pads, sponges, etc.

Bill notes that most microscopes, if installed correctly, can tolerate a few inches of water on the floor; however, they should be shut off and restarted only after lab humidity returns to normal levels.

Those who have experienced fire and smoke damage emphasized cleanup difficulties due to permeation of soot into equipment and infrastructure. Remediation may involve hiring a specialized cleanup company to go over surfaces to remove soot, and the use of specialized paint to seal pipes, walls, and other surfaces. Delicate electronic and optical equipment will also require specialized cleanup or may need replacement.

It becomes obvious when contemplating emergency planning that you can't anticipate every potential scenario, and some events will be on a scale that precludes the possibility of acting on any plan to restore services. However, some thought should be given to the more common, small-scale occurrences, especially those that are most likely in your area.

Finally, because we deal with complex and costly instrumentation, we should operate in "what if" mode every day.

 doi: 10.1017/S1551929511000472

Monitoring equipment performance, especially with older components, and keeping in mind what might happen during off hours (electronics failure, cooling hose leak, etc.), are good habits to develop. One last look in the lab before you leave every day to see how the instrumentation has been left may spare you from dealing with an emergency situation the following morning.

Those of us who use and maintain scientific instruments should incorporate planning for emergency preparedness and recovery into our facility designs, budgets, and daily work routines to whatever extent we can. Our laboratories and instrumentation are resources that give us our livelihoods, function as teaching tools, and provide valuable services to our customers and the larger institutions that we serve. Inherent in our thinking should be planning to protect and restore those services to the best of our ability, in case the next emergency does indeed happen to us.

I would like to again thank those who responded to my posting to gain insights into how other labs address this issue. Your interest in the question is much appreciated, as are your valuable suggestions based on your personal emergency recovery experiences. This is a topic that warrants revisiting on the listserver or through another forum that allows for exchange of suggestions and resources that could be of use to us all.

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https://doi.org/10.1017/S1551929511000472 Published online by Cambridge University Press