

Preparing Your Laboratory For Emergency Shutdown



Background Information

- The need for a laboratory shutdown plan
- Major Terrorist Events
 - In the Post 9-11 world most government agencies have been directed to develop a Continuity of Operations Plan (COOP)
 - In order to comply with our department's COOP we have written a Laboratory Shutdown SOP
- Natural Disasters
 - Natural disasters (Fires, Floods, Earthquakes, Hurricanes)
 - In Florida we focus primary on Hurricane Preparedness and Evacuations

Background Information

- Having a well thought out laboratory shutdown plan may not only prevent loss of expensive equipment but also loss of valuable operational time

Emergency Operations Photos

FDACS participated in a state wide terrorist attack drill



Emergency Operations Photos



Emergency Operations Photos



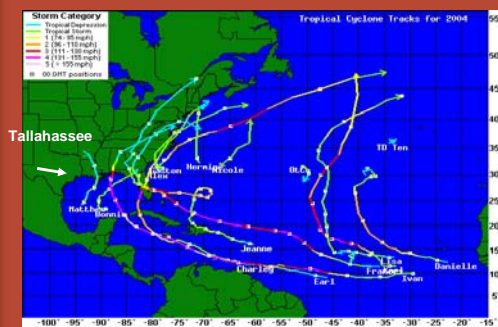
Background Information

Most of our experiences with laboratory shutdowns have been a result of hurricane evacuations encountered during the 2004 and 2005 hurricane seasons.

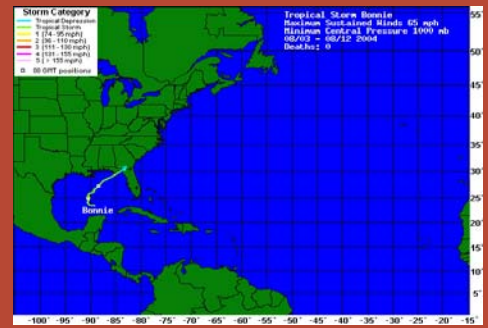
As you can see from this satellite photo you don't have to be in the direct path of a tropical system to feel its effects



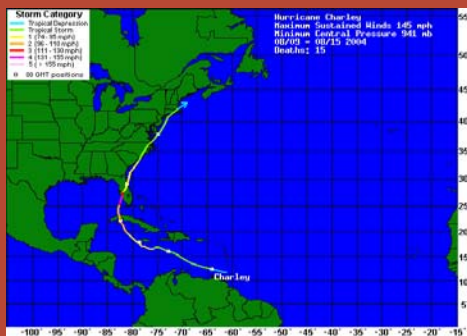
2004 Hurricane Season



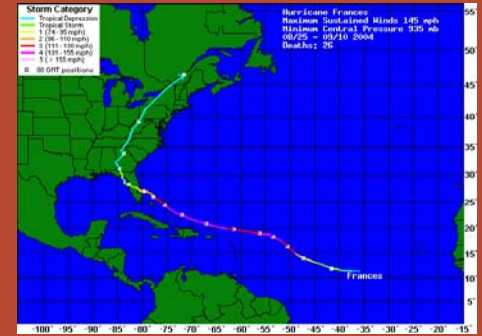
Bonnie Aug. 3-12

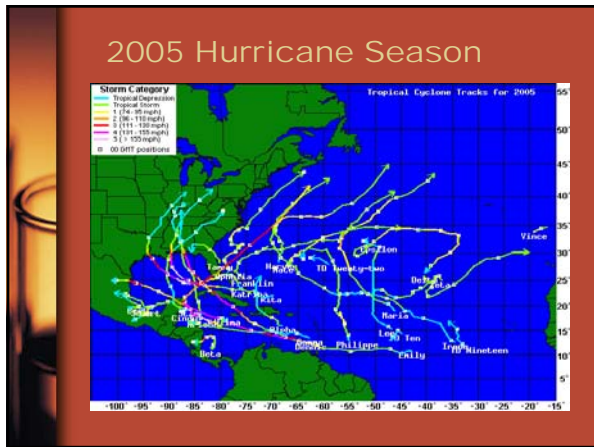
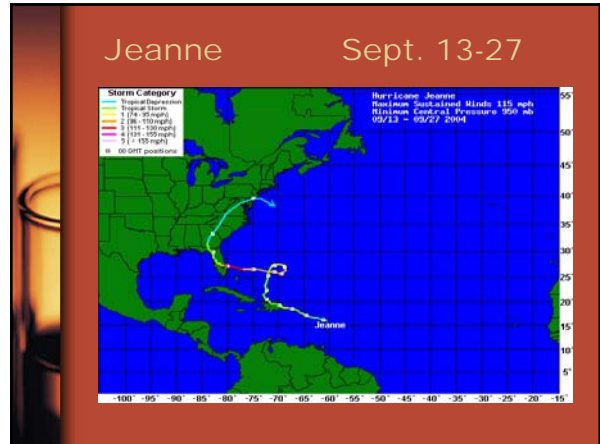
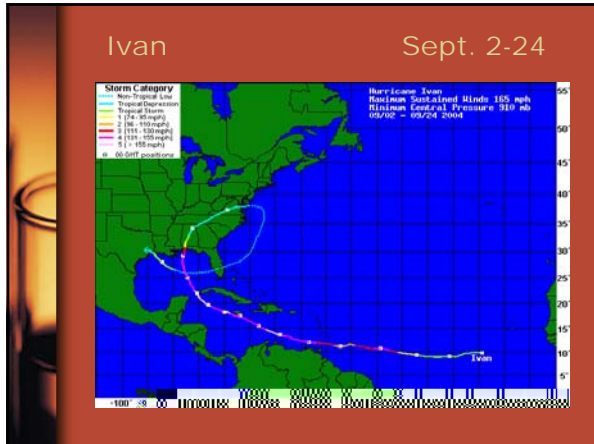


Charley Aug. 9 -15



Frances Aug 25-Sept 10





- ### Criteria for Ordering a Shutdown
- What is the likelihood of a mandatory public evacuation ?
 - Will access to the laboratory complex be affected?
 - How long will the evacuation be in effect?
 - When will the laboratory staff be allowed back into the building?
 - What sort of damage can be expected?
 - In Florida we focus on the hurricane categories

- ### Other considerations
- What is the support function of the laboratory during emergency operations?
 - Will personnel and equipment need to be relocated to an offsite location to continue operations?
 - In Florida the Department of Agriculture provides critical support functions during and after a hurricane

After a hurricane, FDACS provides assistance to county mosquito control districts with aerial pesticide applications

The mosquito population explodes after a hurricane

2.25 Million Mosquitoes

These mosquitoes were collected from one overnight trap near Apopka, FL

Naled Aerial Applications

Every drum of Naled has to be tested by the laboratory prior to use



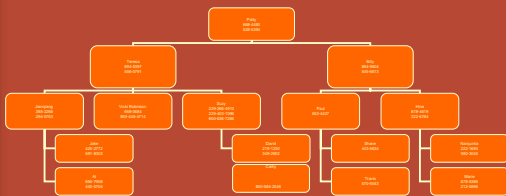
Emergency Contact Information

- Emergency Contact Information will need to be updated prior to any shutdown
 - Phone numbers change frequently
- Also verify physical addresses
 - Mailing addresses will not suffice to locate missing individuals

Emergency Phone Tree

Update the contact information on your emergency phone trees

Make sure all employees have a copy and know who to contact and what to do if they can't contact everyone on their list.



Duration of Laboratory Shutdown

- Short-term (less than a week with minimal disruption to power and damage anticipated)
- Long-term (more than a week with extended disruption to power and significant damage anticipated)
- Emergency Relocation (COOP)

Short-term Shutdown Procedures

- Stop all laboratory operations
- Power off all electronic equipment and computers
 - Remember some equipment needs more time than others to properly shutdown

Short-term Shutdown Procedures

- Ensure that all essential data and SOPs are backed up to an offsite location
- All critical logbooks and manuals should be wrapped in plastic and stored in cabinets

Short-term Shutdown Procedures

- All glassware and other breakable items need to be removed from bench tops



Short-term Shutdown Procedures

- All electrical equipment should be either disconnected from outlets or the electrical breakers should be turned off with the exception of the refrigerators and freezers

This will reduce electrical hazards when the power is restored



Short-term Shutdown Procedures

- Set all refrigerators and freezers to their lowest settings (where practical)

Short-term Shutdown Procedures

- Move any equipment off the floor that might be damaged by rising water



Short-term Shutdown Procedures

- Shut off all compressed gas cylinders



Short-term Shutdown Procedures

- Store all flammable solvents in solvent cabinets
- Close the sashes on all fume hoods
 - Wind driven rain tends to collect in fume hoods

Short-term Shutdown Procedures

- Cover all electrical equipment (computers, analytical instruments, balances, etc) with plastic sheeting



Short-term Shutdown Procedures



We now reuse our plastic sheeting and keep it labeled and stored under each instrument cabinet or counter

Long-term Shutdown Procedures

- The following additional steps assume that there will be an extended disruption to the power supply for the building and more damage to the building's structure

Long-term Shutdown Procedures

- Refrigerated neat standard materials and critical samples will need to be removed to an off site location that has refrigeration units if possible



Long-term Shutdown Procedures

- Battery backup systems will need to be powered down and the batteries properly stored
- Gas cylinders need to be disconnected from the instruments and the caps secured



COOP Emergency Relocation

- If laboratory personnel must relocate to an off-site location to continue laboratory operations, they should take at least the following items

COOP Emergency Relocation

- Copies of all pertinent SOPs
- Any difficult to acquire material (e.g., specialty columns or glassware)
- Personal safety equipment such as prescription safety glasses and respirators

COOP Emergency Relocation

- Any neat analytical reference standards or reagents that might be difficult to acquire at an off-site location will need to be taken



Summary

- Having a well thought out laboratory shutdown plan may not only prevent loss of expensive equipment but also loss of valuable operational time
 - In the past shutting down the laboratory was a 1 ½ day process
 - Now we can complete the full shutdown in less than 4 hours

Be careful - Avoid Casualties !

