Strengthening a Culture of Laboratory Safety

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CDC’s Pledge to the American People

To be a diligent steward of the funds entrusted to it.

To provide an environment for intellectual and personal growth and integrity.

To base all public health decisions on the highest quality scientific data, openly and objectively derived.

To place the benefits to society above the benefits to the institution.

To treat all persons with dignity, honesty, and respect

Walter R. Dowdle, PhD
9 November 1990
Joseph W. Mountin Lecture

http://www.cdc.gov/about/organization/mission.htm
Photo: lobby of building 24
Current Scope of Laboratory Science at CDC

- Outbreak investigations
- Emergency response
- Population health studies
- Laboratory quality improvement
- Advanced molecular detection
- High consequence pathogens
- Genetic studies
- Biomonitoring
- Vaccine development
- Pathogen discovery
- Newborn screening
- Occupational health

- Occupational health modeling
- Poxvirus outbreak investigation
- Tobacco research
- High-containment laboratory science
- Newborn screening
- Electron microscopy
CDC Laboratory Locations Across the Country

- Anchorage, AK: Threats to health in the Arctic
- Atlanta, GA: Hundreds of pathogens and toxins
- Morgantown, WV: Lung health and other key worker safety and health
- Ft Collins, CO: Diseases spread by vectors such as ticks and mosquitoes
- Cincinnati, OH: Worker safety and health
- Spokane, WA: Workplace safety engineering
- Pittsburgh, PA: Mining safety
- San Juan, PR: Diseases spread by vectors
Evolution of Laboratory Safety
A scientist works with infectious influenza virus without modern personal protective equipment (PPE)

Today, scientists use biological safety cabinets (BSC) and powered air purifying respirators (PAPR) when working with highly pathogenic avian influenza virus
“What we’re seeing is a pattern that we missed, and the pattern is an insufficient culture of safety.”

– Dr. Thomas Frieden, Director, CDC
Identifying Opportunities for Safety Improvements

Example: Ebola Incident, 2014

<table>
<thead>
<tr>
<th>Incident</th>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transfer of potential live Ebola virus to lower level of containment</td>
<td>Sample misidentification</td>
<td>Color-coded sample identifier</td>
</tr>
</tbody>
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Summary of CDC’s Approach:
1) Respond quickly to and remediate laboratory incidents
2) Conduct internal and external reviews of agency laboratory culture and standards
3) Implement and track progress on safety improvement recommendations
Laboratory Safety at CDC
CDC’s Top 5 for Laboratory Science and Safety

1. **Building** the foundation
2. **Guiding** a culture of quality
3. **Improving** laboratory quality and safety management, collaboration & best practices across CDC laboratories
4. **Educating & training** laboratory scientists
5. **Encouraging** the science of safety
Building the Foundation

- Established clear laboratory leadership
- Provide scientific, technical, and managerial guidance
- Advocate and engage laboratory scientists within the agency
Vision
- CDC laboratories are the model for scientific excellence and safety

Mission
- Support a strong culture of laboratory science and safety through leadership, collaboration, training, and continuous quality improvement

Functions
- Leadership in laboratory science/safety
- Laboratory quality improvement
- Communication and collaboration
- Training
- Policy and compliance

OADLSS Office of the Associate Director for Laboratory Science and Safety

Office of the Director

Office of Laboratory Science*

Office of Laboratory Safety*

*Proposed

http://www.cdc.gov/about/lab-safety/about.html
Guiding a Culture of Quality and Safety

- Created a new Laboratory Quality Council to improve the quality of CDC laboratory operations by providing guidance and establishing policies for the agency
  - Includes representatives from across CDC, as well as, external laboratory quality and safety experts

- Creating an internal educational awareness campaign to reinforce incident reporting across laboratory scientists and all CDC workers
**Improving Lab Quality and Safety Management, Collaboration & Best Practices Across CDC Laboratories**

- Collaborating in quality and safety management across all labs
- Pursuing external assessment of labs, recognizing that multiple approaches will be needed
- A pilot project is underway to pursue International Organization for Standardization (ISO) 17025 standards in five infectious disease labs
  - Through this process identify best practices and apply lessons learned for broad implementation across CDC labs
- Conducting surveys, risk assessments and utilizing tools
Educating & Training Laboratory Scientists

Laboratory Leadership Service (LLS)

Core Lab Training Improvement by the LSTB

- Competency Identification
- Course Review, Competency Alignment, Identification of Learning Objectives and SMEs, Strategic Evaluation Planning
- Results and Next Steps

Risk-Assessment Course

- Identify hazards
- Reassess risk
- Conduct procedure
- Evaluate risk
- Mitigate risk

http://www.cdc.gov/lls/
Encouraging the Science of Safety

The Laboratory Safety Science and Innovation (Intramural) Fund advances the science of safety by encouraging evidence-based research, generating new data to inform best practices of laboratory safety.

FY16 Projects Funded

- Laboratory Safety Innovations
- Pathogen Inactivation
- Risk Assessments & Evaluation
- Laboratory Disinfection
Strengthening the Culture of Laboratory Safety

- Laboratories and lab scientists are essential to public health
- Laboratory quality and safety management is a process of continuous improvement and not a one-time fix
- Work must be ongoing for improvement
- Implementing risk assessments, training and engagement is critical at the lab, individual and worker level

For more information please contact Centers for Disease Control and Prevention

http://www.cdc.gov/about/lab-safety/
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