USDA ARS 4TH INTERNATIONAL BIOSAFETY & BIOCONTAINMENT SYMPOSIUM:
GLOBAL BIORISK CHALLENGES- AGRICULTURE AND BEYOND

Baltimore, Maryland
Feb 6-9, 2017

ARS Culture Change

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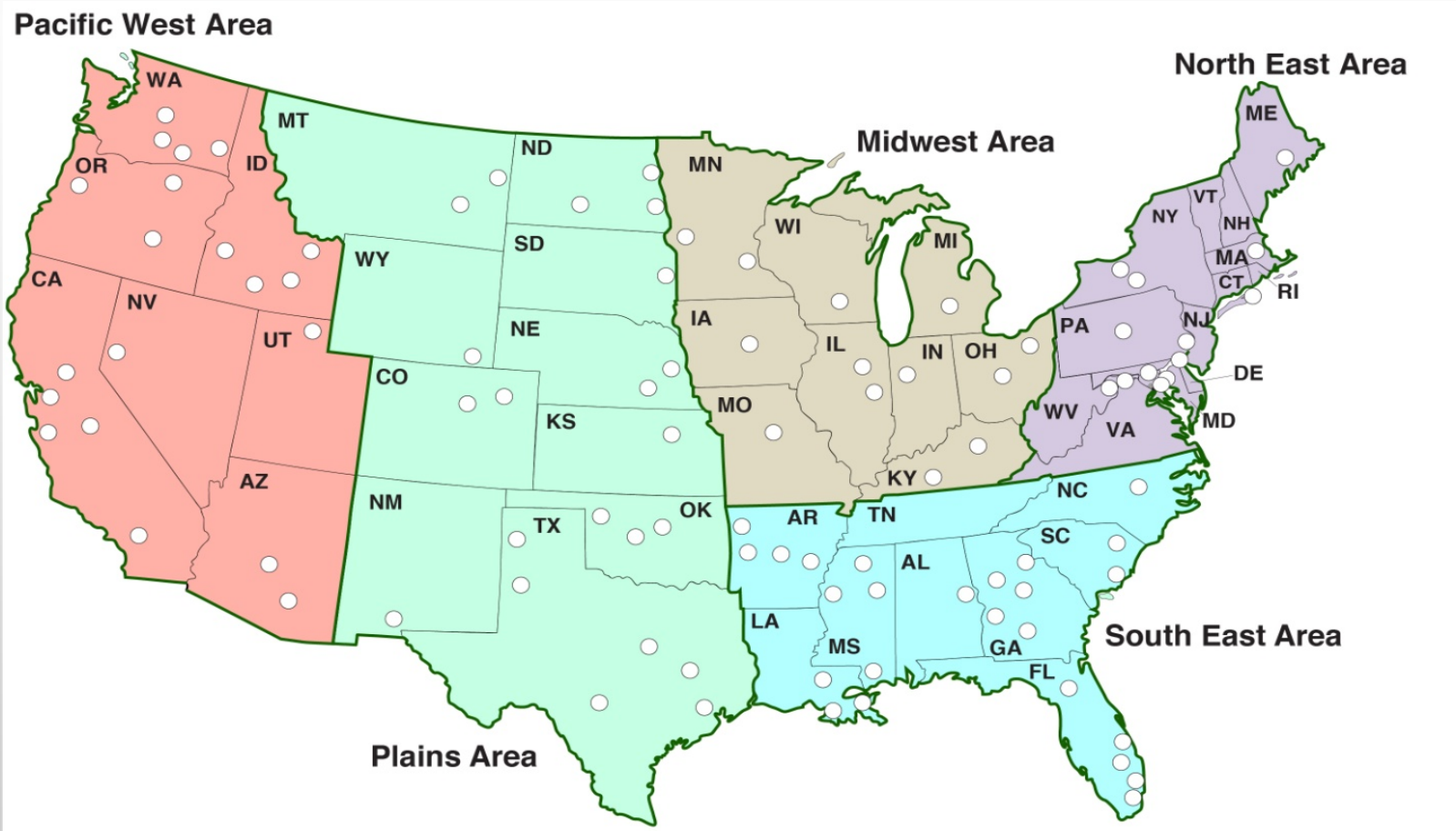
USDA-ARS PROFILE

- IN-HOUSE RESEARCH AGENCY OF USDA
- FARM-TO-TABLE RESEARCH SCOPE
- 17 NATIONAL PROGRAMS
- 700+ PROJECTS
- 2,100+ SCIENTISTS
- 90+ LABORATORIES
- $1.1 BILLION ANNUAL BUDGET (FY16)

http://www.ars.usda.gov/

- OFFICE OF NATIONAL PROGRAMS
  - SETS RESEARCH DIRECTION AND DEVELOPS ANNUAL BUDGET
  - AGENCY BIOSAFETY OFFICER
  - AGENCY ANIMAL CARE AND USE OFFICER

ARS IS DIVIDED INTO 5 GEOGRAPHIC AREAS ACROSS THE COUNTRY



LEARNING FROM MY PAST





- Grew up on a family farm/ranch in South Dakota
- Started my career at an ARS animal research facility in Nebraska

USDA, AGRICULTURAL RESEARCH SERVICE

BIOSAFETY, SAFETY, HEALTH, AND ENVIRONMENTAL MANAGEMENT (SHEM) PROGRAM INITIATIVE

"FOSTERING A CULTURE OF AWARENESS, SUPPORT AND RESPONSIBILITY"

EXCELLENT SCIENCE CONDUCTED SAFELY

BIOSAFETY/SHEM PROGRAM INITIATIVE: WHY NOW?

- In 2013, high profile accidents and laboratory acquired infections in United States
  - Increase of criminal prosecutions for work related fatalities:
    - Apr 2013: UCLA professor, felony arraignment for inadequate training and supervision in fatal lab fire
    - Oct 2013: President, Port Arthur Chemical and Environmental Service, felony conviction for falsifying records in hydrogen sulfide fatality
  - ARS Laboratory Acquired Infection
  - ARS Hazard accident

- 2014: Safety Stand Down
  - Biosafety issues at federal facilities and universities
- Increased scrutiny on life science research by Congress, GAO, Press and the Public.

Preserve the right to conduct research

2013 ARS LABORATORY ACQUIRED INFECTION

- BSL-2 laboratory
- Experiments conducted utilizing various strains of *Escherichia coli* and *salmonella spp*.
- Periods of intense laboratory activity conducted by the research scientist.
- Multiple sources of spills and aerosol generating operations
- Ecoli O157:H7 (Shiga-like toxin)
  - Hemorrhagic diarrhea
  - Patient treated with antibiotics
  - Patient nearly died

ENHANCING THE ARS BIOSAFETY AND SAFETY PROGRAM

2013 ARS laboratory accident

- A risk assessment was performed but risk mitigation was flawed.

A turning point in my biosafety and safety perspective

- LAI brought back memories of a farm accident 30 years ago.
  - I knew we had to do more for our employees, supervisors and families.

Take home messages-

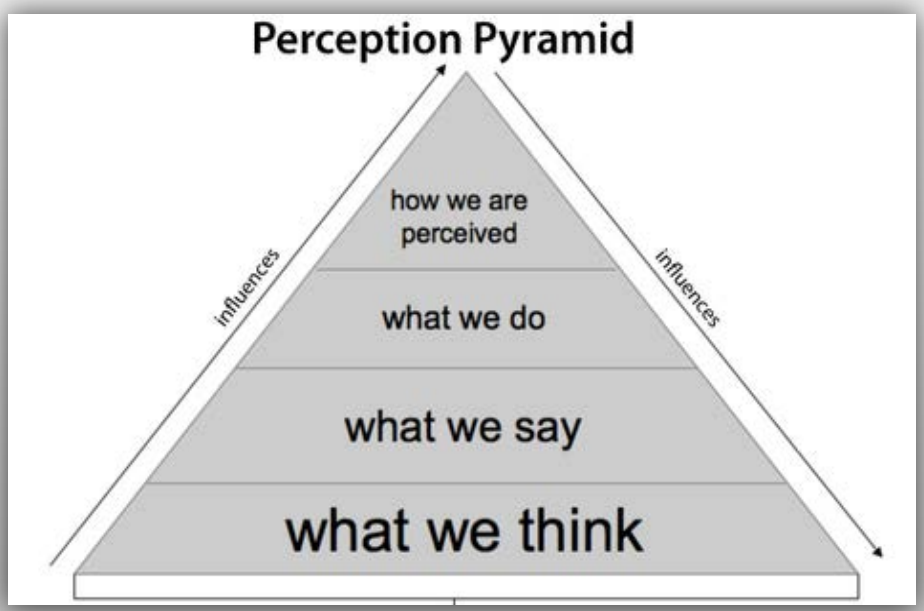
- The importance of robust **risk assessment** processes.
- The need for clear **reporting** procedures for incidents, accidents, etc.
- The importance of **training** on BSL-2 practices.

How do we better serve our laboratories?

- Preserve the right to conduct research
- How do we make our biosafety and safety programs practical and beneficial without undue burden to our labs?
  - Requires location specific tools
    - SOP
    - Training, proficiency testing
    - Equipment
    - Reporting, metrics
    - Risk assessment
- How do we get “buy-in”?

- We have to change the safety culture

How do we improve the Safety Culture?



We Change Perceptions!

How do we change the Biosafety/ Safety Culture?

A strong safety culture is more than equipment, facilities, policies and procedures…..It takes leadership, commitment and continual reinforcement!

"We need to develop leadership that represents and integrates technical and social expertise. Leaders must instill safety and security as core missions driving the work of scientific and political institutions. By supporting work to identify and mitigate risks, acknowledging failure and uncertainties, and facilitating participation of diverse experts, they can empower organizations to respond to new challenges."

Palmer, Fukuyama and Relman. A more systematic approach to biological risk 12/15/2015, Science: Vol 350 Issue 6267

The ARS Approach (Thus Far)

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- In 2013, ARS Administrator empaneled a Leadership Steering Committee to establish Agency-wide vision, and an Operational Committee to recommend procedures to support the vision.
- Conducted an analysis of ARS biosafety and SHEM functions and programs at the Agency level
- Benchmarking ARS biosafety and SHEM programs against other Federal research agencies and universities

LEADERSHIP STEERING COMMITTEE

- Composed of National Program, Area Directors, Administrative and Financial Management and Agency-level Biosafety and SHEM Managers.

- Charter
  - Establish Agency-wide vision
  - Provide Leadership for safety related policies and programs
  - Identify existing program gaps and develop and provide resources to close them.

The Pilot and Ongoing Assessment

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- Town hall meeting introducing the team, purpose of the review and answer employee questions
- Detailed program review w/ location safety staff
- Agency Sr. Leadership representative meets with employees and conducts listening sessions (Pre-assessment Perception Survey)
- Tour/review the labs and observe work practices
- Teach and learn
- Train the trainer
- Generate the assessment report and assist locations in developing corrective action plans and monitor plan completion progress.

2013/2014 Pilot Assessments
WRRC, Albany CA
ERRC, Wyndmor, PA
RRC, Athens, GA
BARC, Beltsville, MD

2015 Assessments
NADC, Ames, IA
NCCCWA/AFRL, Leetown, WVa
Knipling-Bushland U.S. Livestock Insects Research Laboratory, Kerrville, Tx

2017 Assessments
Human Nutrition- Davis, CA, Madison, WI, Stoneville, MS, and Manhattan, KS.

The ARS Approach Continues

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- Based on the Pilot Assessment outcomes have conducted a Trend Analysis of common findings to evaluate gaps and institute improvements.
- Also identified best practices at locations for potential Agency wide deployment.
- The Leadership Steering committee appointed a subcommittee to review roles and responsibilities related to safety and health programs, including Staffing levels
- Continue to communicate and engage employees related to improving safety culture

The ARS Approach Continues - Training

- ARS has provided training for:
  - Senior Leadership – Fostering A Safety Culture
  - Science and Science Support Staff
  - SHEM-developed Supervisor Roles and Responsibilities Course
- ARS has developed training for deployment in the field:
  - ARS Biosafety Training Modules on AgLearn (based on BMBL 5th Edition)
    - Introduction to Biosafety Concepts
    - Risk Assessment
  - ARS/CDC developed Instructor-led modules on Biosafety for BSL-2 Labs
- ARS held a Biosafety, Safety, Health and Environmental Management (BSHEM) Conference, May 2015 attended by ARS leadership and Safety Professionals
- February 2016 USDA ARS Biosafety, Safety and Health Awareness Month

The ARS Approach Continues

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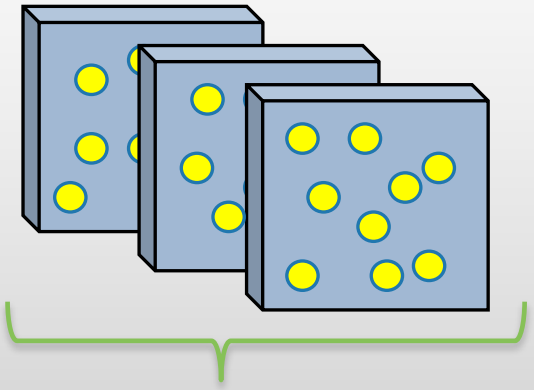
- In the Fall of 2015, the Leadership Steering committee chartered a sub-working to assess current methods and documentation of hazard identification, assessment and control processes

- Roles and Responsibility Working Group

- Future sub-working groups
  - Training and proficiency testing
  - Accident, incident, near-miss reporting

A "SWISS CHEESE" MODEL OF RISK



References: Center for Chemical Process Safety, *Process Safety Leading and Lagging Metrics*, Revised January 2011, p. 4, http://www.aiche.org/uploadedFiles/CCPS/Metrics/CCPS_ProcessSafety_Metrics_2011_FINAL.pdf, accessed 31 August 2011; J. Reason, "Human Error: Models and Management," *BMJ* 2000, Vol. 320, pp. 768–770.

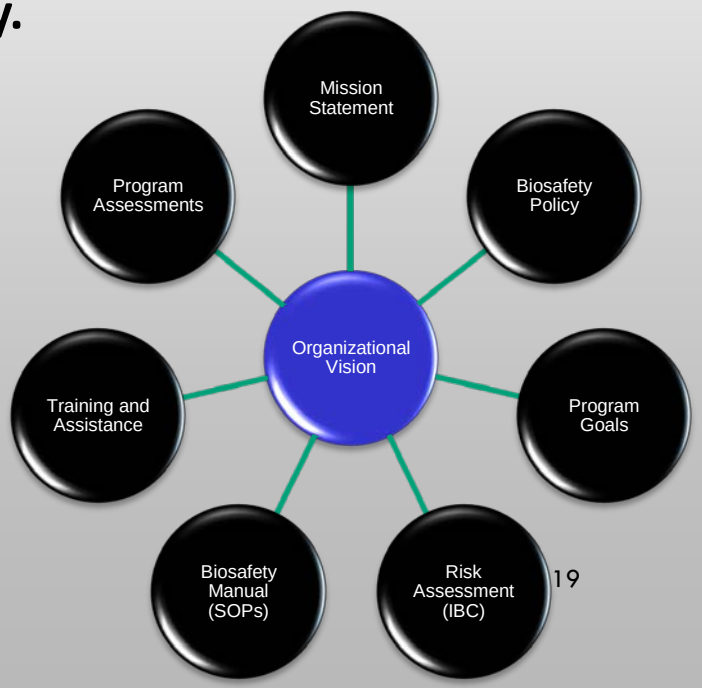
What will it take to implement improvements?

- Time- change does not occur overnight!
- ARS leadership is committed to safety.
- Employee engagement and communication is critical.
- Strategic plan.
- Accountability at all levels.
- Identification of issues and best practices.
- Resources.
- Metrics and continual improvement.

WHAT'S ENVISIONED FOR THE FUTURE?

...and, **most importantly**, ARS will work to continually improve its biosafety and SHEM programs relating to:

- **Management leadership and accountability.**
- **Employee participation.**
- **Hazard identification and assessment.**
- **Hazard prevention and control.**
- **Policy and procedure development.**
- **Information and training.**
- **Accident and near-miss investigation.**
- **Continual evaluation of program effectiveness.**



Challenges to enhancing a biosafety program?

ARS Administrator
Dr. Chavonda Jacobs-Young

- You are the face of the biosafety program.
  - How are you perceived?
- Recognize leadership's perspectives.
  - It is unlikely that they will be a biosafety expert.
    - Education of principles and practices.
- How do you get started?
  - Administrator approval
  - Co-leadership buy-in
    - Where are the problems?
    - What does an enhanced biosafety program look like?
    - What do I do?
  - Agency buy-in and acceptance
  - Need to use real life events
- How do you maintain the inertia?

Biosafety and Safety is an ARS Value

Keep our Employees, Visitors and Communities Safe