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A Perspective on the Future of Global Biosecurity

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Global Chemical and Biological Security

Arizona Biosecurity Workshop, 2018 - December 14th, 2018

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INNOVATIVE SOLUTIONS FOR COUNTERING GLOBAL CHEMICAL and BIOLOGICAL THREATS

Strengthen capacities to safely, securely, and responsibly detect, handle, and control dangerous chemical and biological materials

- Promote the responsible use of chemical and biological materials, equipment, and expertise globally.
- Improve understanding and management of the risks associated with accidental and deliberate misuse of chemical and biological materials or agents.
- Encourage global partnerships and adherence to international risk management standards.

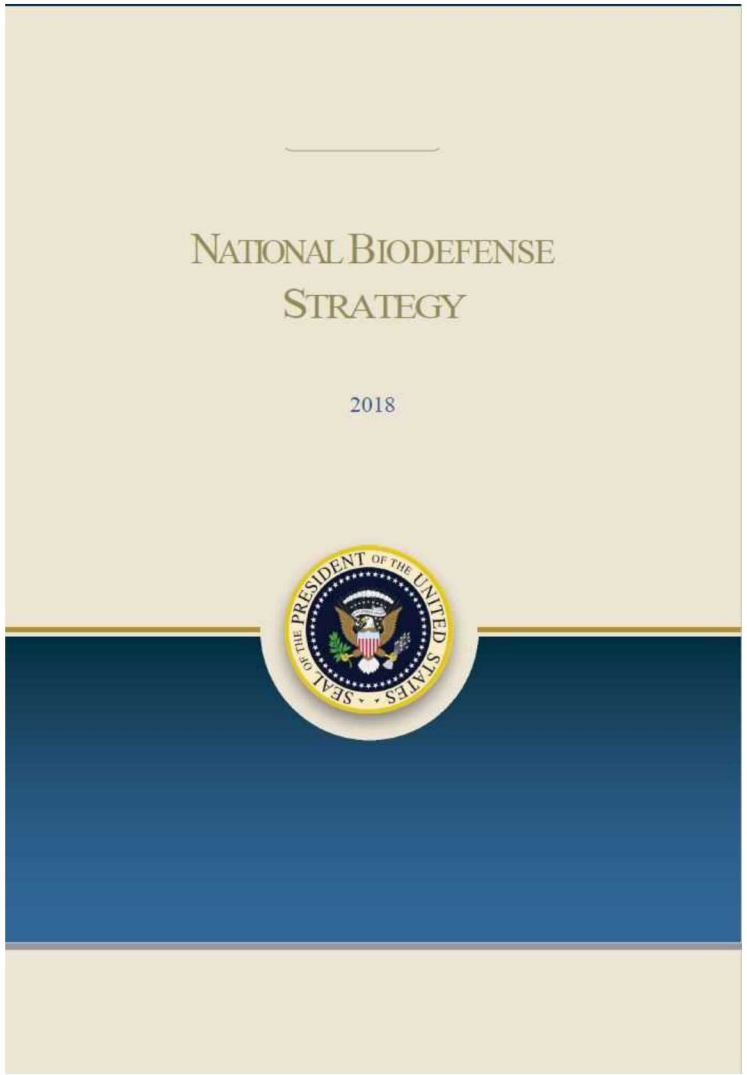
The Current State of the Global Challenge

"Both state and nonstate actors have already demonstrated the use of chemical weapons in Iraq and Syria. **Biological and chemical materials and technologies—almost always dual-use—move easily in the globalized economy, as do personnel with the scientific expertise to design and use them for legitimate and illegitimate purposes. Information about the latest discoveries in the life sciences also diffuses rapidly around the globe, widening the accessibility of knowledge and tools for beneficial purposes and for potentially nefarious applications.**"

-Daniel R. Coats, Worldwide Threat Assessment of the U.S. Intelligence Community, 13 February 2018

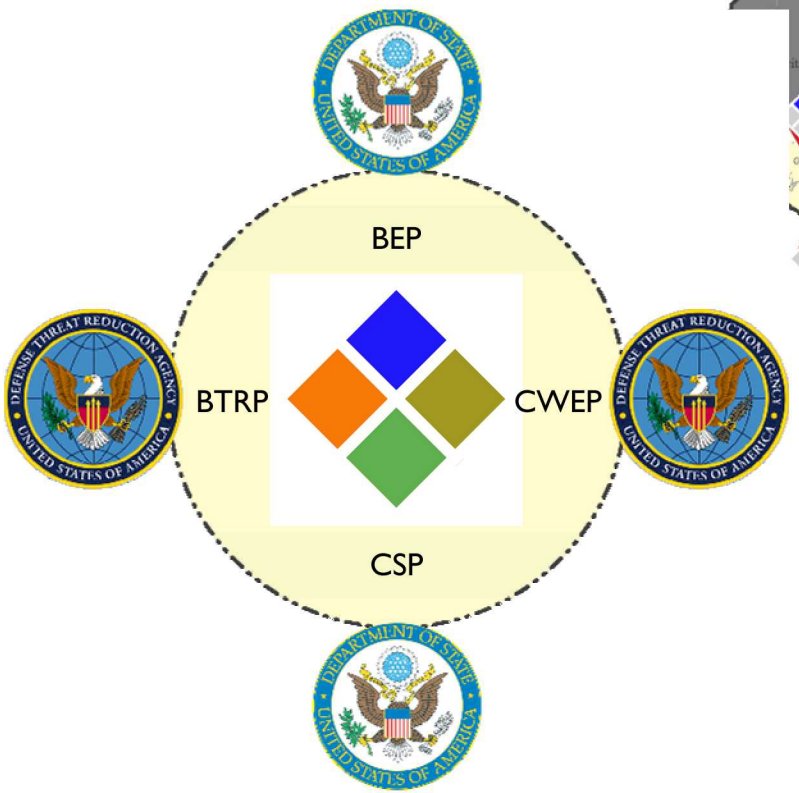
Why Global Enagagement on Biosecurity?

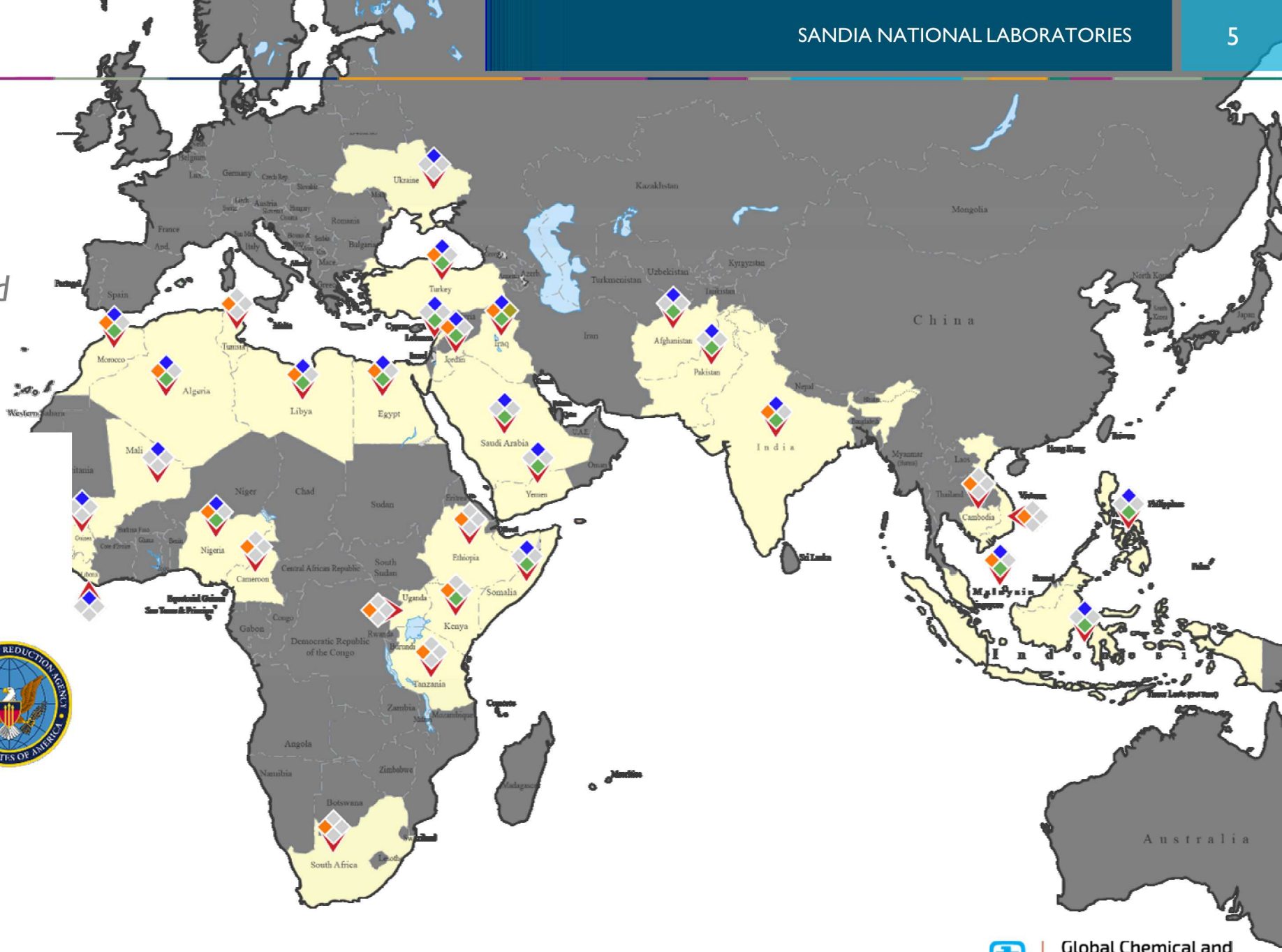
"Biological risk management requires understanding and assessing biological risks, and taking steps to prepare for, prevent, and respond to them, regardless of whether they originate in the United States or abroad. It also requires shared international recognition that the risk is global to empower effective, collective mitigation. In our interconnected world, it is not if, but when, the next biological incident will occur."



GCBS PROGRAM ENGAGEMENTS

Support to the US Department of State and the Defense Threat Reduction Agency



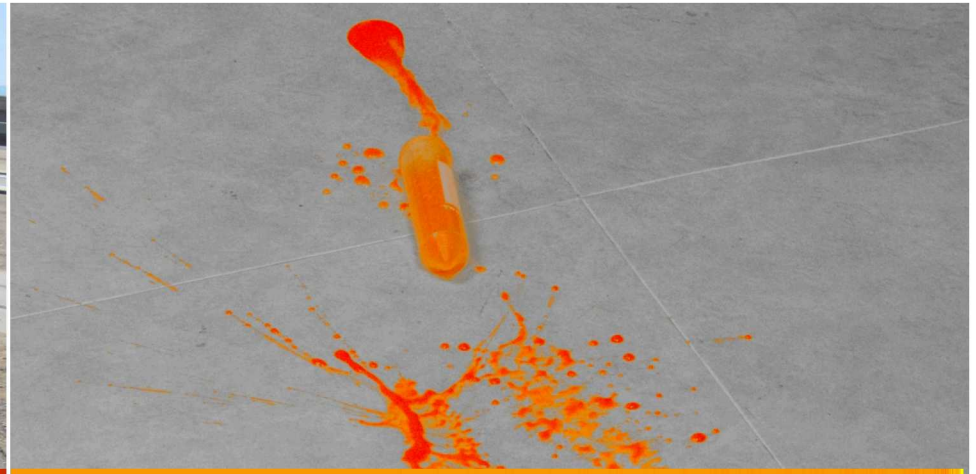


Global Chemical and Biological Security

GLOBAL CHEMICAL and BIOLOGICAL SECURITY

Core Capabilities

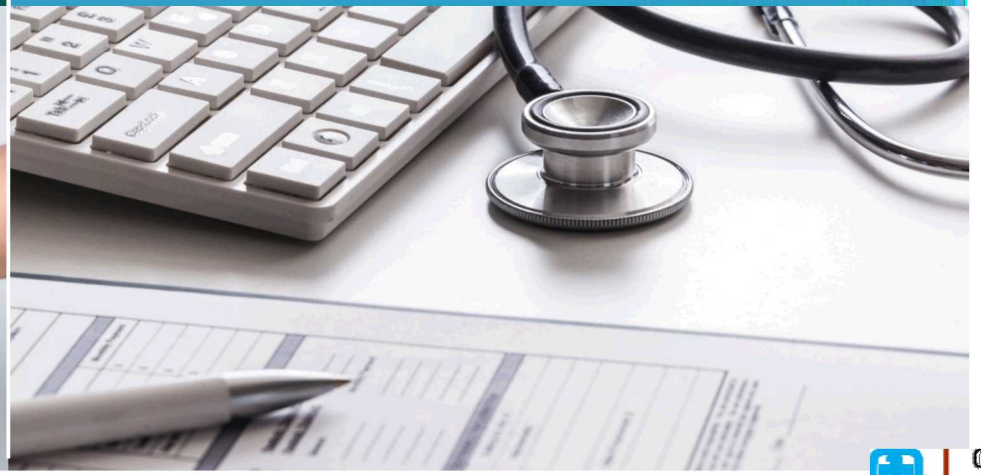
Human Capacity Development



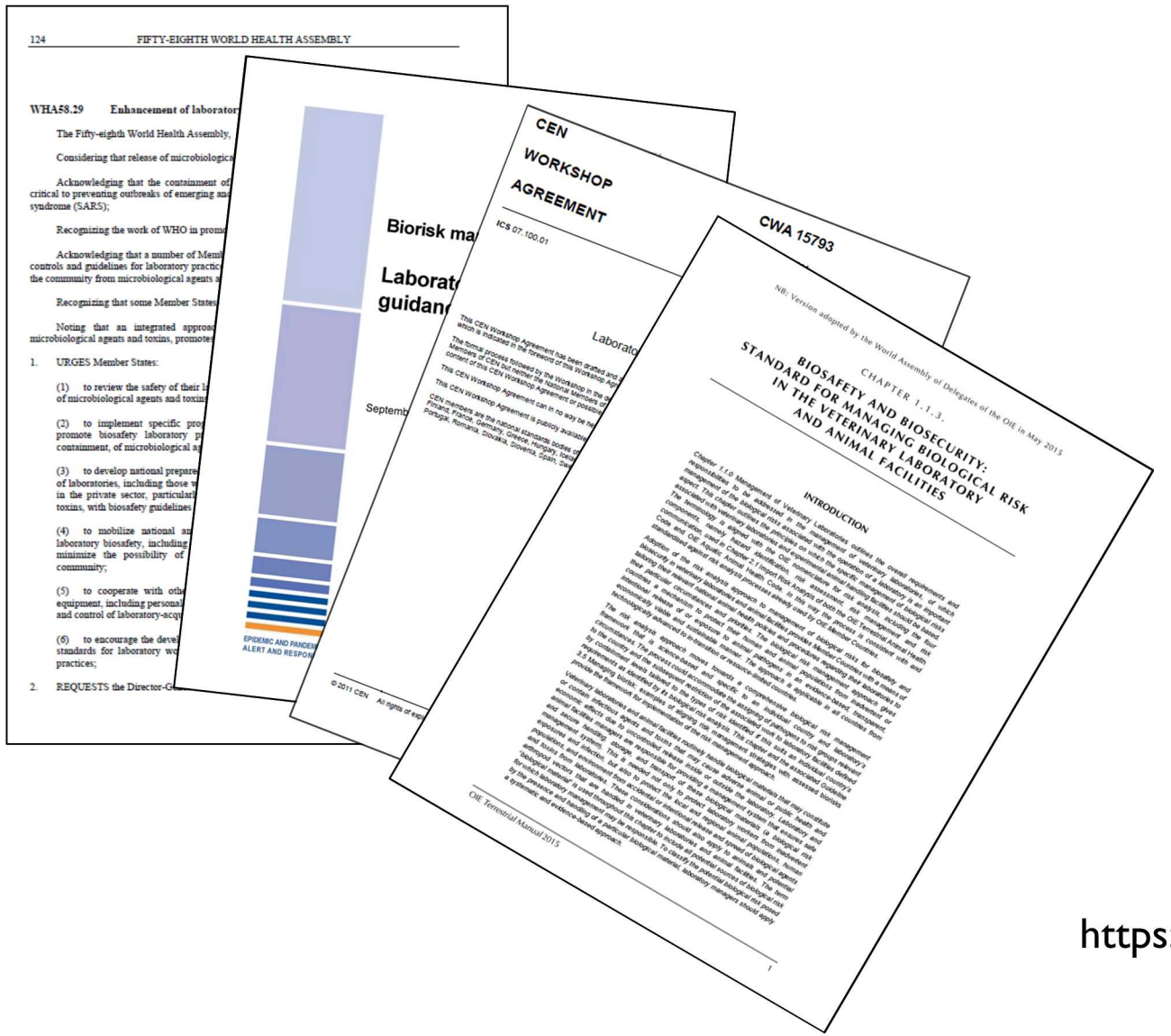
Risk Management

Analysis

Health Security



Global Norms



ISO/NP 35001

Laboratory biorisk management system -- Requirements

General information

Current status : Under development

Edition : 1

Technical Committee : ISO/TC 212 Clinical laboratory testing and in vitro diagnostic test systems

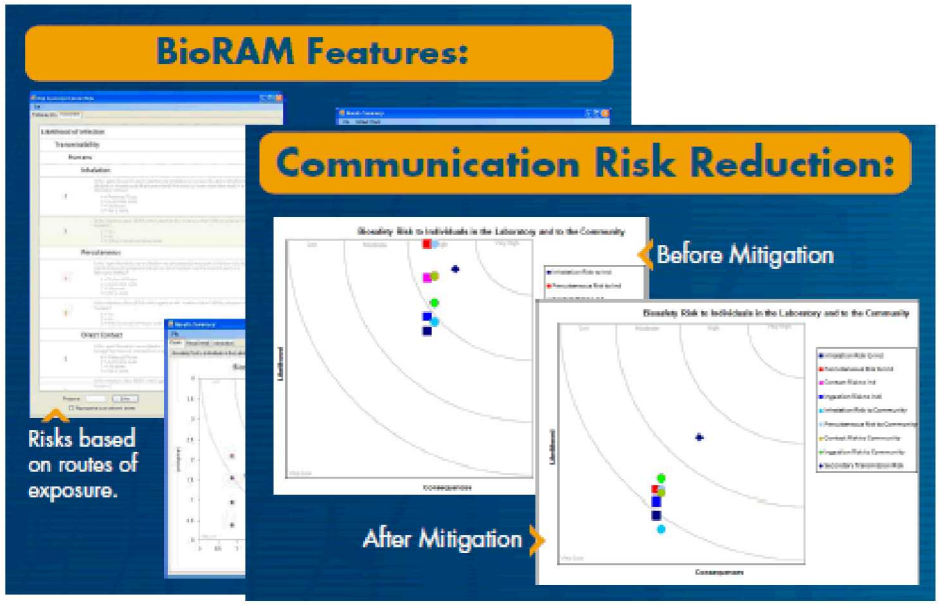
https://www.iso.org/standard/71293.html?browse=tc

Advancing Facility Biorisk Management Systems

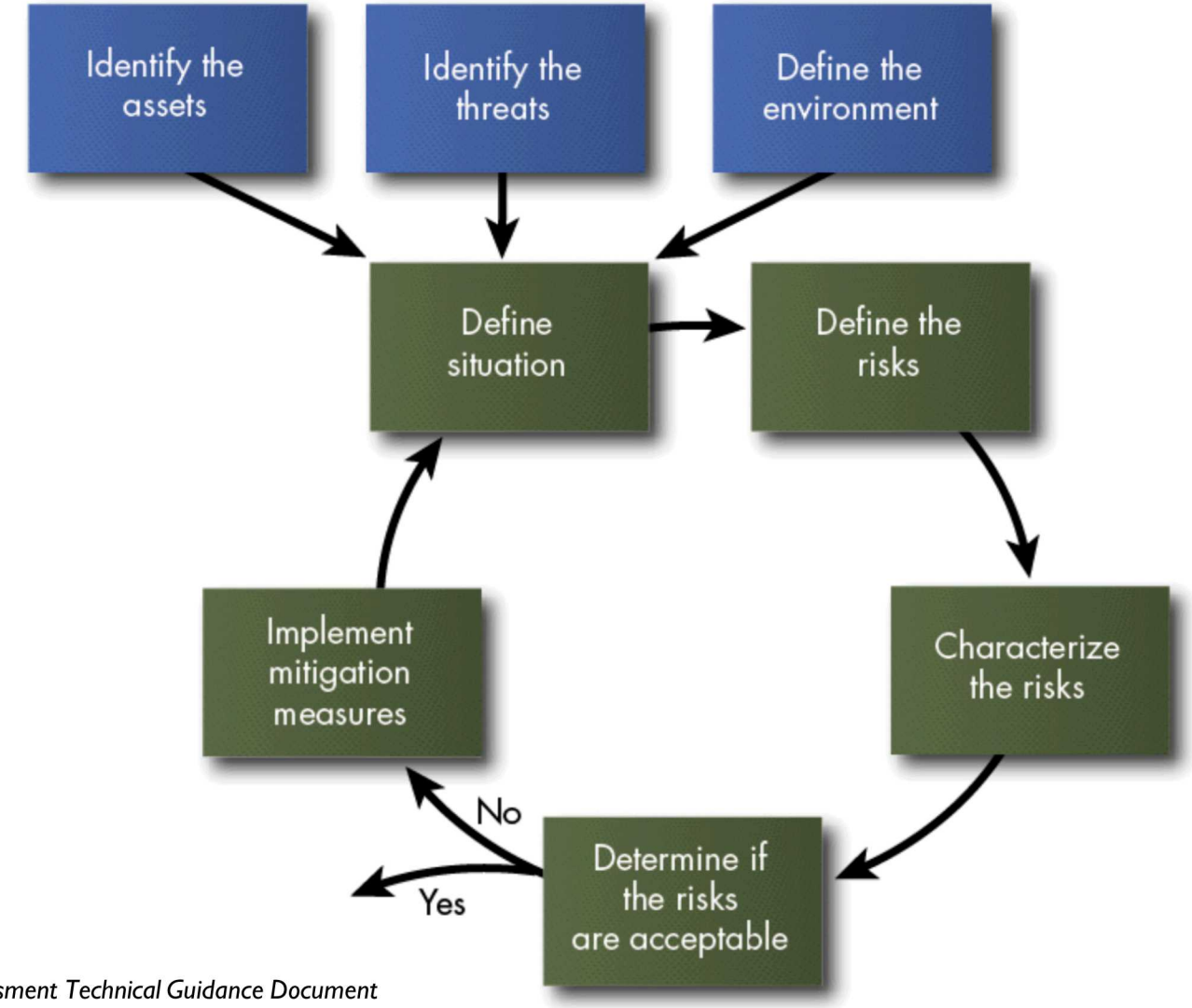
Facility-Level Biosafety and Biosecurity Risk Assessments

- **Comprehensive site assessments to determine and prioritize biosecurity and biosafety risks**
- **Utilize GCBS-Developed Risk Assessment Methodologies**
- **The Tools**
  - Biosafety RAM
  - Biosecurity RAM
  - Chem SAM

Basis for site-specific recommendations to address priority gaps in BRM



Biosecurity Risk Assessment – Basic Framework



Laboratory Biosafety and Biosecurity Risk Assessment Technical Guidance Document
International Biological Threat Reduction, Sandia National Laboratories, in collaboration with The International Federation of Biosafety Associations,

BioRAM as a Resource for FSAP-Regulated Entities

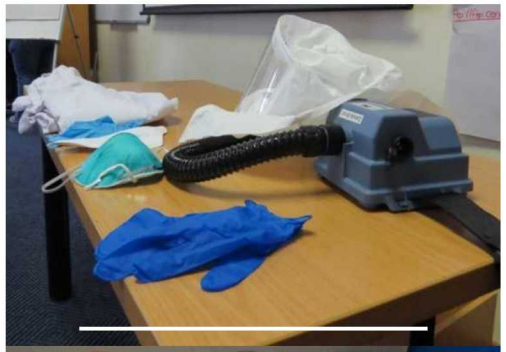
https://www.selectagents.gov/guidance-securityrisk.html

Global Biorisk Management Curriculum

Biosafety and Biosecurity training materials

- Strategic, sustainable
- Anywhere, anytime
- Well-branded, well-managed
- Customizable

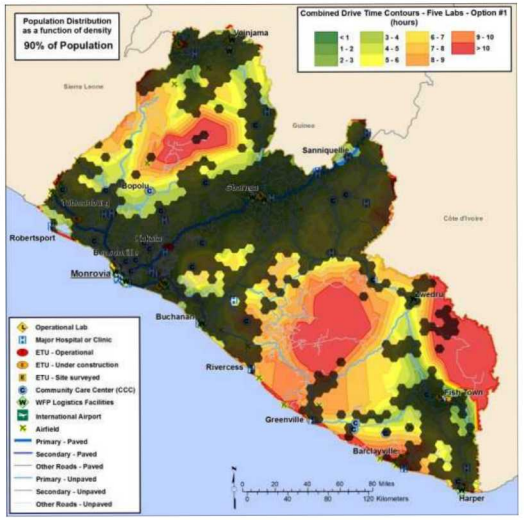
GBRMC

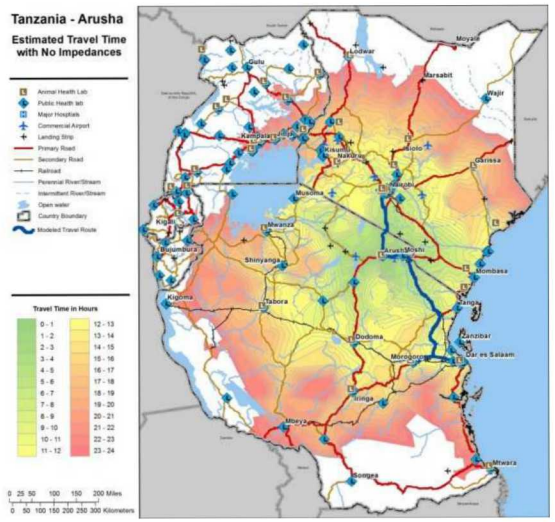


Network of trainers

- In over 61 countries
- 861 trainers in the network
- Since 2012, taught >850 times to >4600 students

Lab network analysis





National laboratory systems contribute to a country's ability to detect and respond effectively to biological threats in an interconnected global network

Objective:

- To connect laboratories, reduce sample transport time, and inform lab network strategies

Activities:

- Identify and develop transportation networks from provinces to a country's national veterinary laboratory
- Develop laboratory network plans for countries to enable compliance with IHR (2005)
- Sample transportation network analysis for Ebola response

Future/Emerging Global Biosecurity Concerns

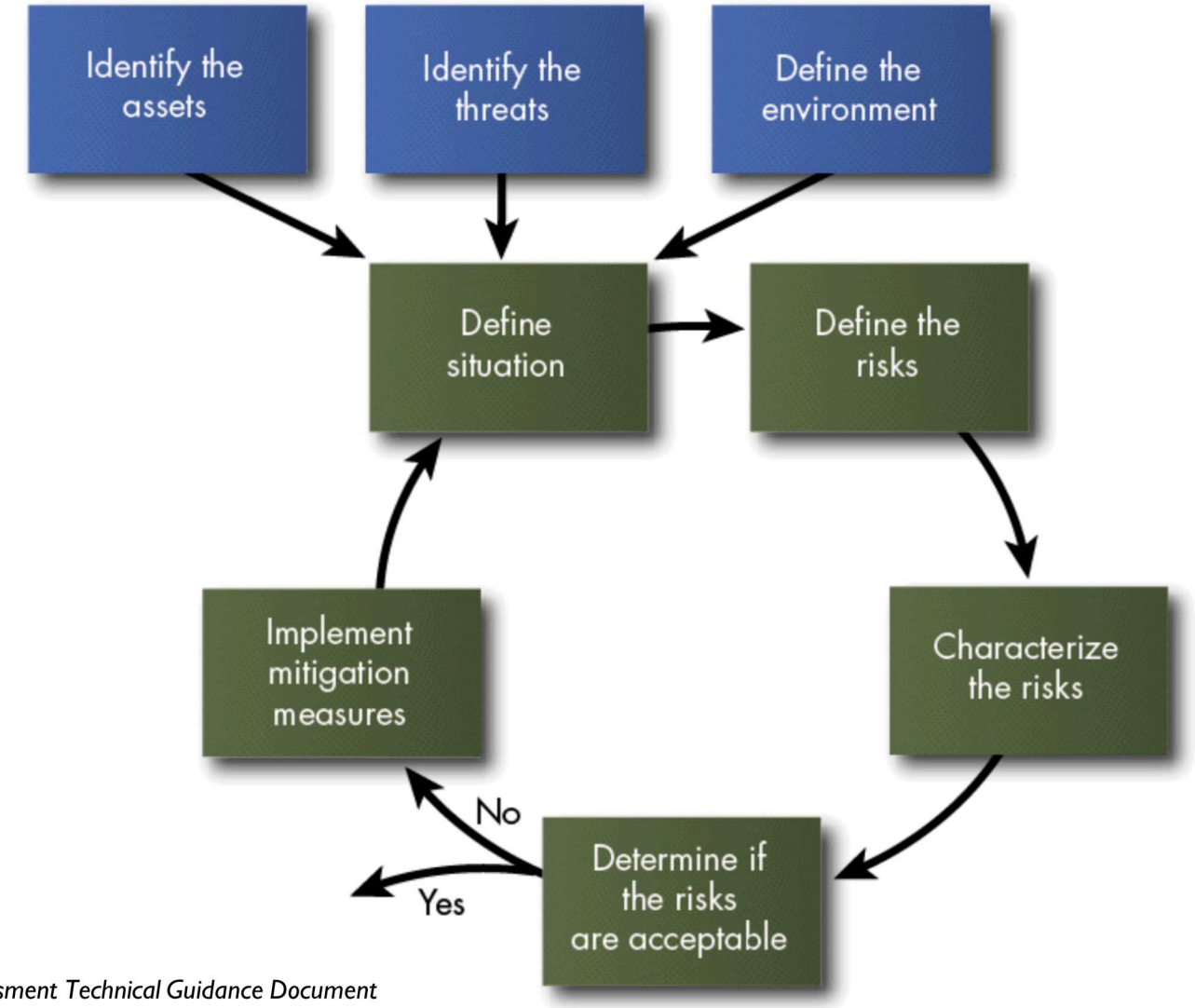
- Degradation of international of norms against chemical weapons use and the implications for biosecurity.
  - State use of chemical weapons and toxic industrial chemicals against their own citizens
  - State use of chemical weapons as tools of assassination
  - ISIS use of chemicals in battle field scenarios
- Biosecurity in ungoverned spaces
- Geographical shift of the bioeconomy from west to east.

Biosecurity

Biological security (biosecurity) is the risk-and threat-based control measures established to prevent the unauthorized access, misuse, loss, theft, diversion and intentional release of valuable biological materials, pathogens, toxins, information, expertise, equipment, technology and intellectual property that have the potential to cause harm to humans, animal, plants, the environment, public safety or national security.

Gillum, D., et al. (2018). The 2017 Arizona Biosecurity Workshop: An Open Dialogue About Biosecurity. *Applied Biosafety*, 23(4), 233–241. https://doi.org/10.1177/1535676018781854

Biosecurity Risk Assessment – Basic Framework



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