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# Laboratory Biorisk Management

## Asia-Pacific Organization of Cell Biologists

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# Definitions

- ⚠ **Biorisk** encompasses **biosafety** and **biosecurity**
- ⚠ **Laboratory biosafety**: containment principles, technologies, and practices implemented to prevent unintentional exposure to pathogens and toxins, or their unintentional release
- ⚠ **Laboratory biosecurity**: institutional and personal security measures designed to prevent the loss, theft, misuse, diversion, or intentional release of pathogens and toxins

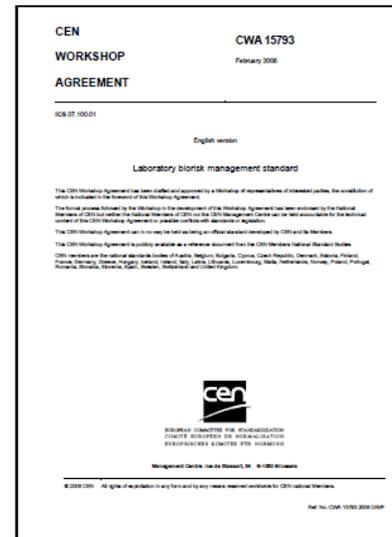




# Laboratory Biorisk Management

☣ System or process to control safety and security risks associated with the handling or storage and disposal of biological agents and toxins in laboratories and facilities

☣ **CWA 15793:2008**





# Biorisk Management: the **AMP** Model

**Biorisk Management =  
Assessment, Mitigation, Performance**

KeyComponents of Biorisk Management





# Risk, Likelihood, and Consequences

- ⚠️ A **hazard** is a source or object that can cause harm
- ⚠️ A **threat** is a person who has intent and/or ability to cause harm to other people, animals, or the institution
- ⚠️ A **risk** is the likelihood and consequences of an event with a hazard (or a hazard and threat)

$$R = f(L, C)$$

- ⚠️ **L , Likelihood** is the probability of an event occurring
- ⚠️ **C = Consequences** is the severity of an event





# Biorisk Management = Assessment, Mitigation, Performance



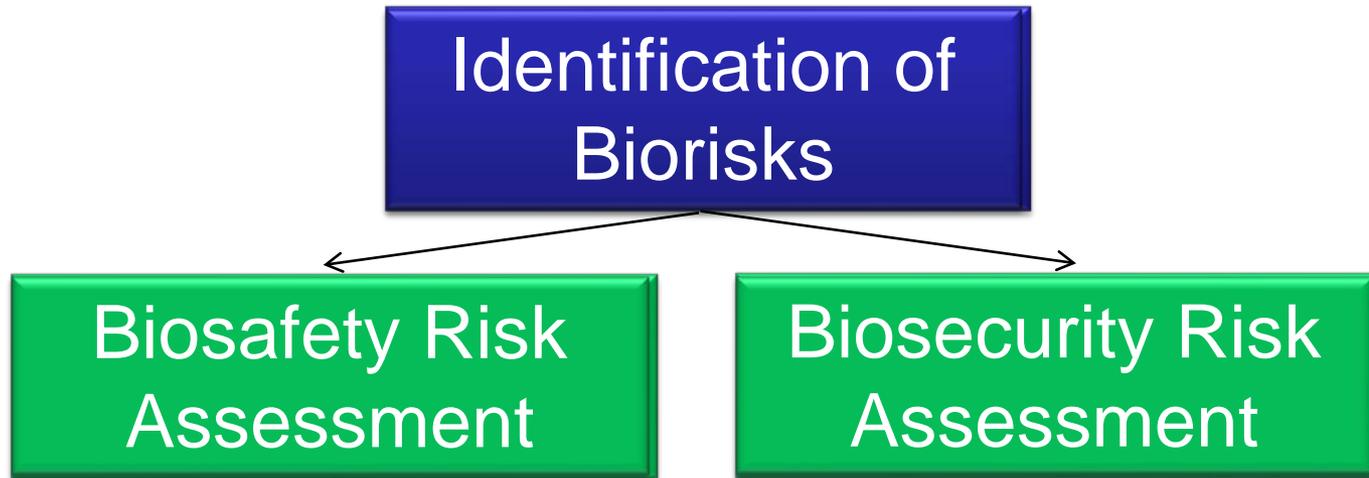
Risk identification  
Hazard/threat identification  
Likelihood evaluation  
Consequences evaluation



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# Biorisk Mitigation

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**Biorisk Management =  
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# Mitigation Control Measures

- ⚠ **Engineering Controls:** Physical changes to work stations, equipment, materials, production facilities, or any other relevant aspect of the work environment that reduce or prevent exposure to hazards
- ⚠ **Administrative Controls:** Policies, standards and guidelines used to control risks
- ⚠ **Practices and Procedures:** Processes and activities that have been shown in practice to be effective in reducing risks
- ⚠ **Personal Protective Equipment:** Devices worn by the worker to protect against hazards in the laboratory



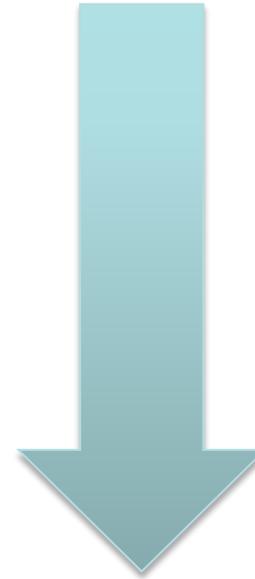
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# Mitigation Control Measures

- ④ *Elimination or Substitution*
- ④ Engineering Controls
- ④ Administrative Controls
- ④ Practices and Procedures
- ④ Personal Protective Equipment



## Hierarchy of Controls (HOC)

Control methods at the top of the list are in general more effective and protective than those at the bottom.



# Biorisk Management

## Biorisk Management = Assessment, Mitigation, Performance



Risk identification  
Hazard/threat identification  
Likelihood evaluation  
Consequences evaluation



Elimination or Substitution  
Engineering Controls  
Administrative Control  
Practices and Procedures  
Personal Protective Equipment



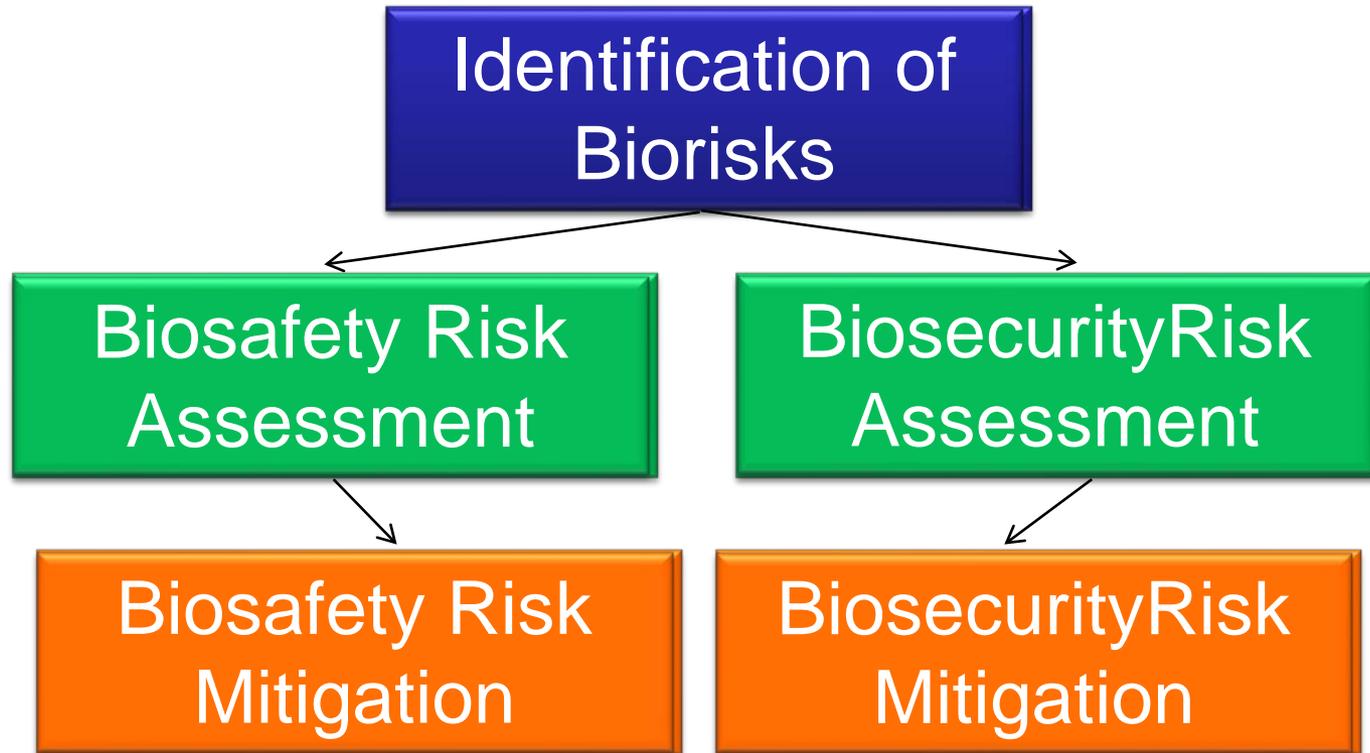
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# Identification of Biorisks



# Biorisk Performance

**Biorisk Management =**  
**Assessment, Mitigation, Performance**





# What is Performance?

**Performance** is the way in which someone or something functions

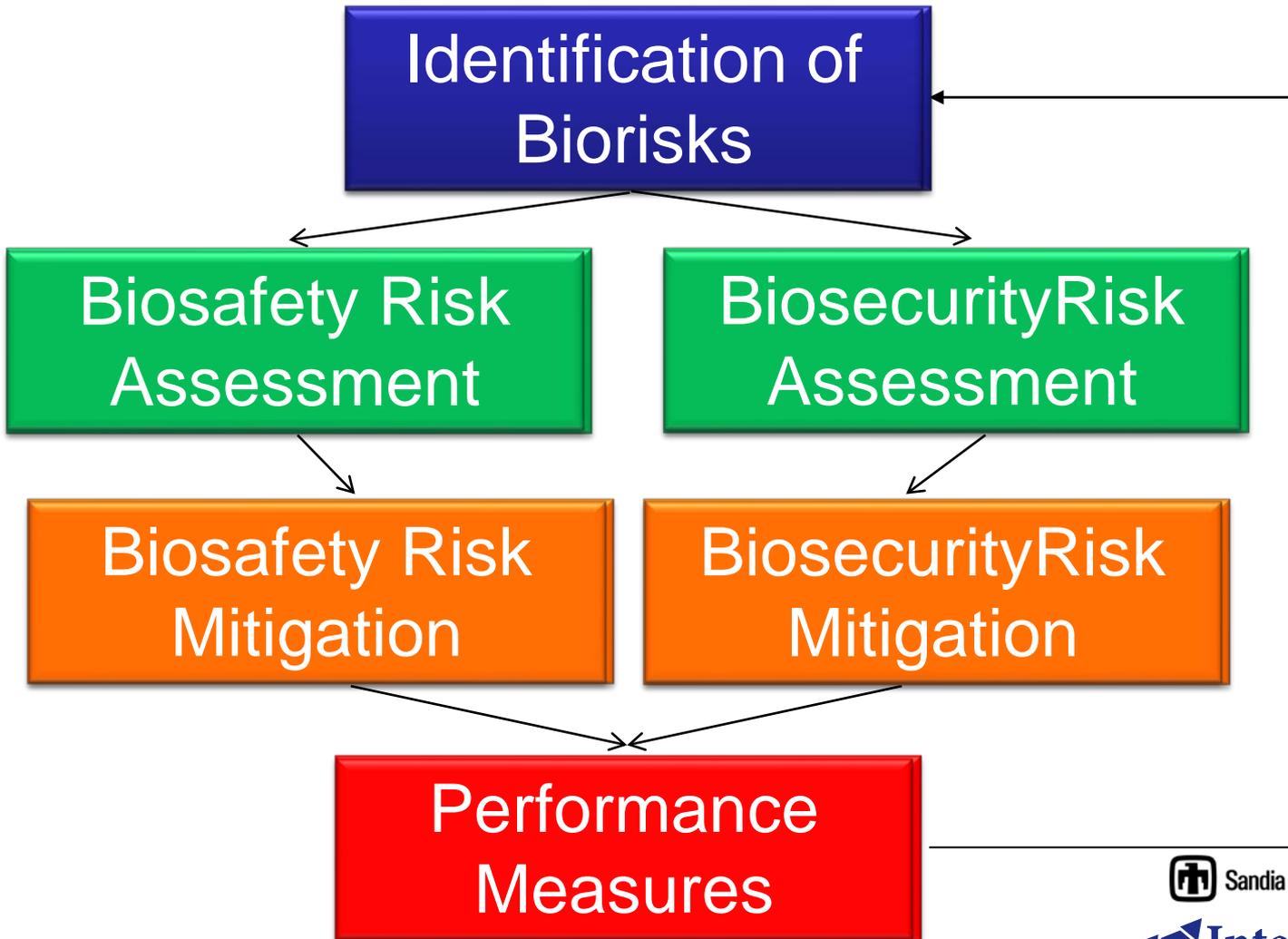
**Performance** is the result of all the efforts of a company or organization

**Performance** improves biorisk management: you know that your system works and is sustainable, and that the risk is acceptable





# Biorisk Management





# Biorisk Management = Assessment, Mitigation, Performance



Risk identification  
Hazard/threat identification  
Likelihood evaluation  
Consequences evaluation



Elimination or Substitution  
Engineering Controls  
Administrative Control  
Practices and Procedures  
Personal Protective Equipment



Control  
Assurance  
Improvement

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# Laboratory Biorisk Management Standard

- ☣ CWA 15793:2008
- ☣ Management system
- ☣ Consistent with other international standards such as ISO 9001/14001 and OSHAS 18001
- ☣ Performance based
- ☣ Voluntary
- ☣ Plan, Do, Check Act based





## Examples of topics covered:

- Ⓛ Biorisk Management Policy
- Ⓛ Hazard identification, risk assessment and risk control
- Ⓛ Roles, responsibilities and authorities
- Ⓛ Training, awareness and competence
- Ⓛ Operational control
- Ⓛ Emergency response and contingency plans
- Ⓛ Inventory monitoring and control
- Ⓛ Accident and incident investigation
- Ⓛ Inspection and audit
- Ⓛ Biorisk management review

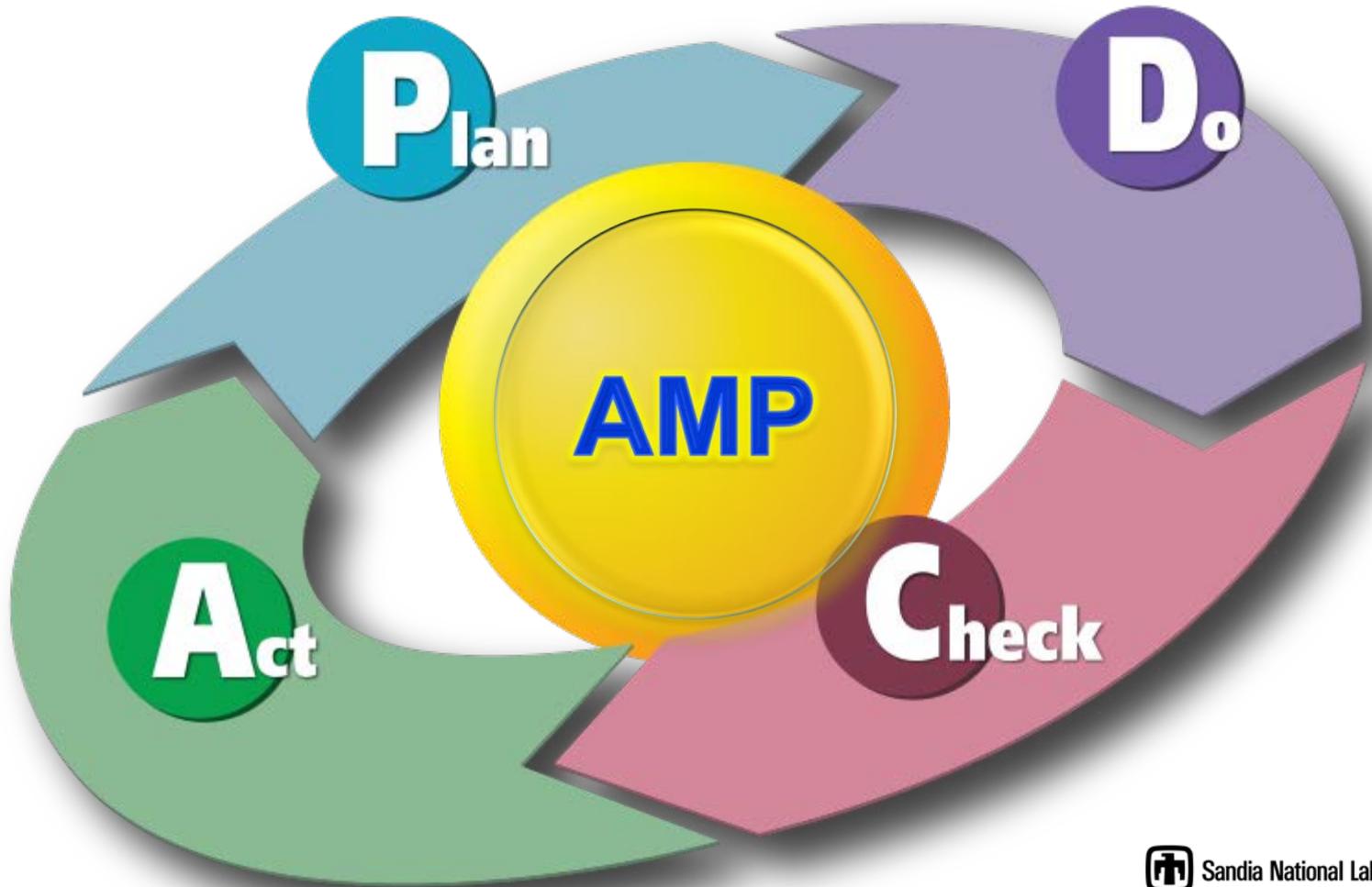


<http://www.cen.eu/CENORM/Sectors/technicalcommittees/workshops/workshops/ws31.asp>





# Systematic Approach



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# Questions??

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