OPPORTUNITIES FOR RISK COMMUNICATION USING BIORAM

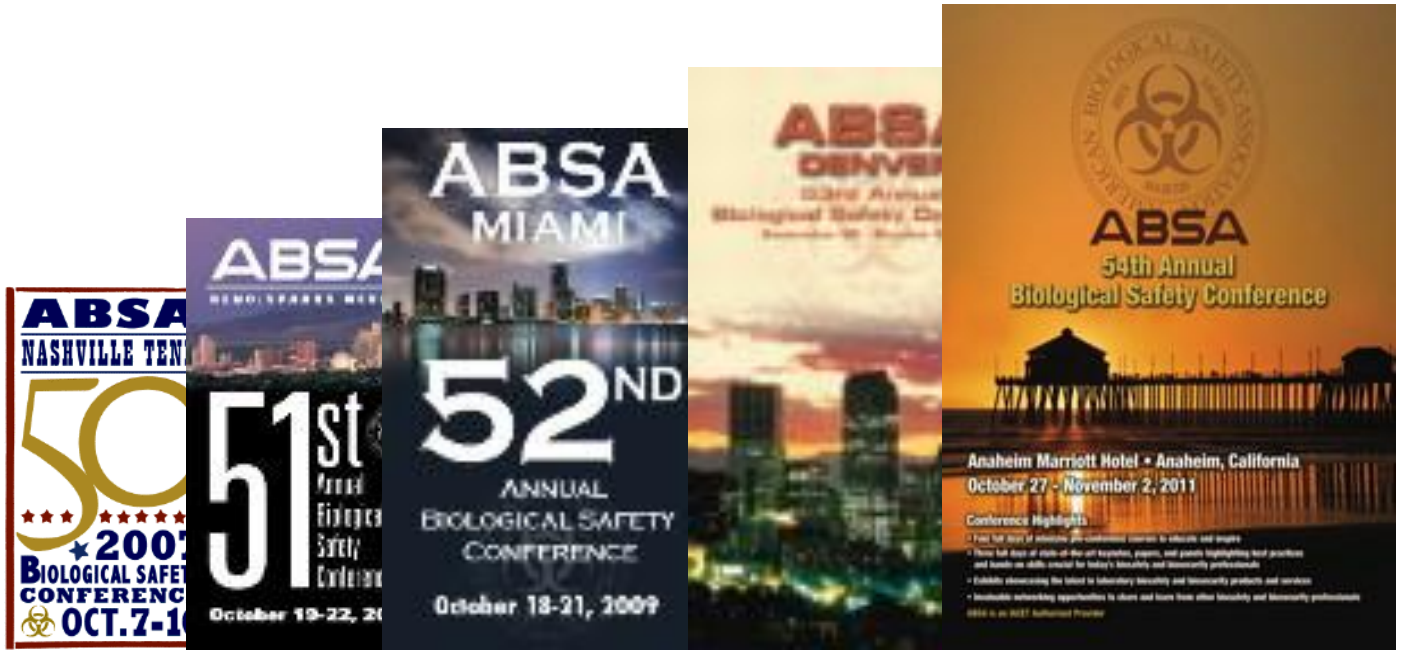
"how to get people to understand the risks you are talking about"

SAND No. 2011-0083C
Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000

International BIOLOGICAL THREAT REDUCTION

Once a year at ABSA – Why?

- To meet the friends
- Create network
- Find new tools and products



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What do we have in common?

- Communicate with the staff
- Dialogue with PI's
- Enlighten the IBC´s
- Struggle with management

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How do we....

- Motivate ...
- Convince ...
- Inspire ...
- Get money ...
- Get support ...

- When all we can say is that ... we *think* we did make a difference in last fiscal year

What is the value of ...

- An incident ...
- A LAI ....
- A parent .....

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These are the questions…

Where do we want to be?

- **We want to live an easy life**

- **Everybody *immediately* will do what we ask them!**
  - Bosses
  - PI's
  - IBC´s
  - Employees

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What is the likelihood…

- **...that we will get that message conveyed smoothly, easily and without resistance?**

What is the consequence…

- **...if we do not suceed as good Biosafety Communicators?**

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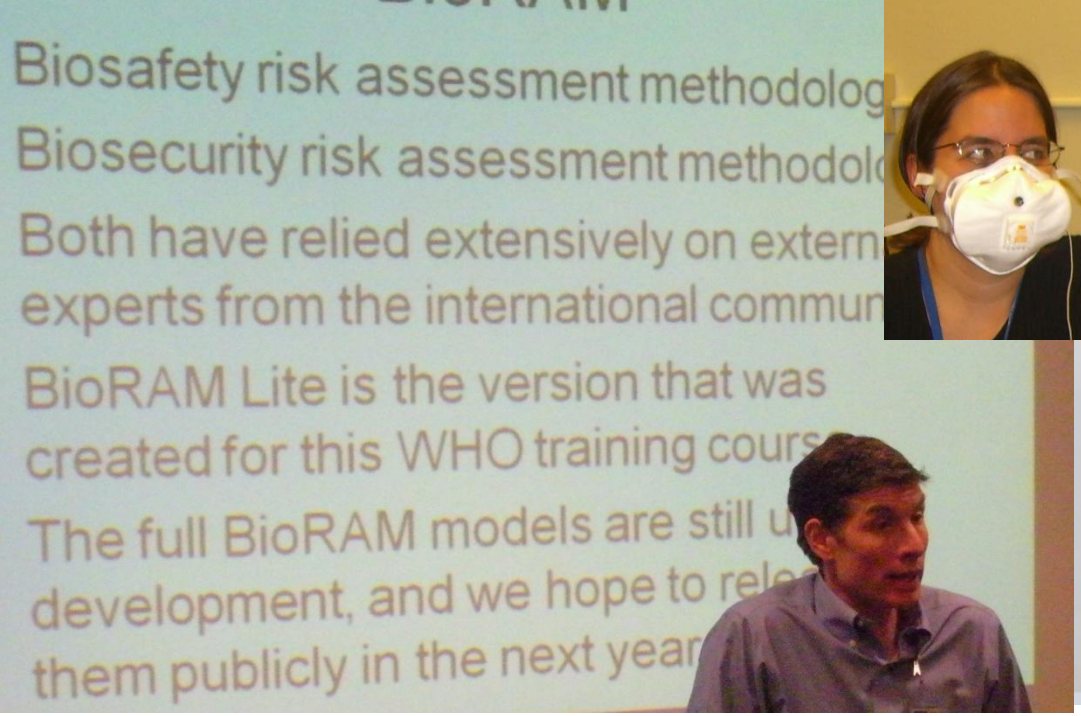
How do we get there?

- **… Use the BioRAM tool as a mean to make it obvious to the rest of the world, that there is *NO BETTER WAY* than do *exactly* as we say!**



- **Vision**
  - A standardized approach to risk assessment
  - Create understanding
    - **A tool for prioritization**
    - **A tool for communication**
- **Mission**
  - Get consensus
    - **What risks do we see in bio-labs**
      - Get stakeholders from all over the world to help
  - Create tool
    - **Make it available**

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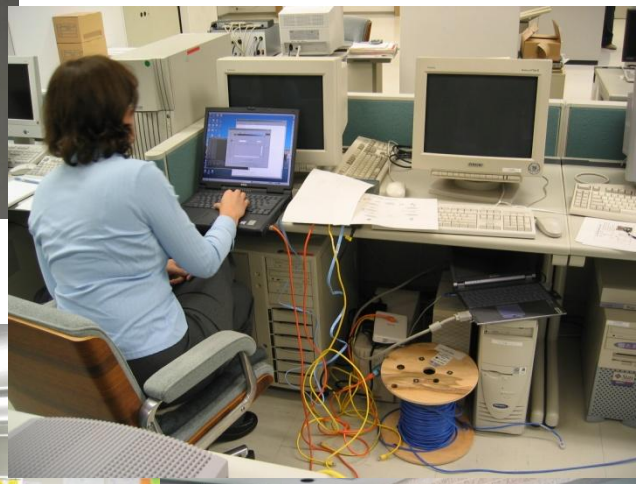
Strategy

- Brainstorming
- Workshops
- Software design
- Workshops
- Software modification
- Workshops
- Software adjustment
- α, β testing
- Software finalizing
- Workshops – report templates



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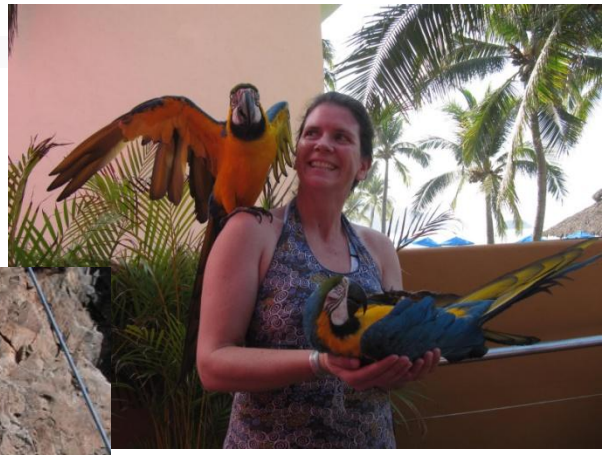
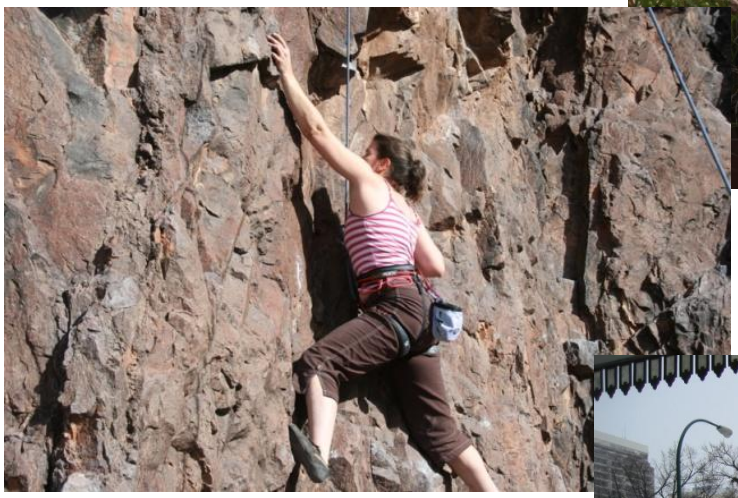
It takes more than just a strategy …

- A project lead …





- Willingness …

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BioRAM
Idea to Product: 3 years

2007
- 2'nd Biorisk workshop in Winnipeg

2008
- Internal Sandia funding received. Outline methodology
- 3'rd Biorisk workshop in Winnipeg
- Review in Reno

2009
- 4'th Biorisk workshop in Winnipeg
- Review by subject matter experts
- Software release of α-version -version to limited peer review group

2010
- Software release of α-version to large peer review group
- Software release of β -version

LABORATORY DIRECTED RESEARCH & DEVELOPMENT

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Risk Questions: Humans and Animals

- **Transmissibility**
  - Inhalation
  - Percutaneous
  - Contact
  - Ingestion
- **Agent characteristics**
  - Morbidity
  - Mortality
  - Stability
  - Mitigation methods
- **Likelihood of exposure**
  - Laboratory process
  - Animals
- **Biosafety mitigation measures**
  - Containment
  - Procedures
  - Management
  - PPE
- **Secondary transmission**

Biosafety RAM

LABORATORY DIRECTED RESEARCH & DEVELOPMENT

Risks based on routes of exposure

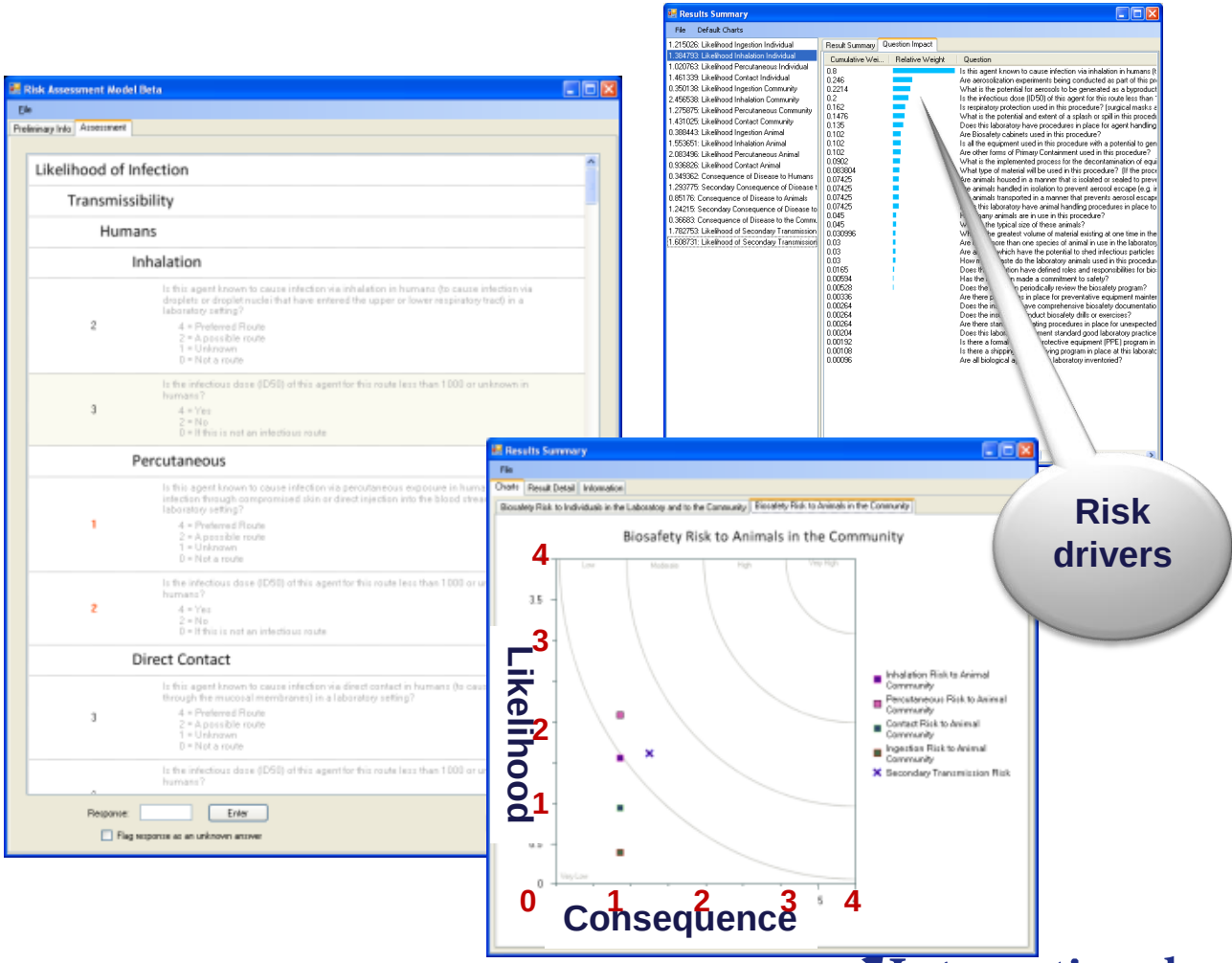
- Inhalation
- Ingestion
- Contact
- Percutaneous

Agents

- MSDS

Procedures

- Safe
- Unsafe



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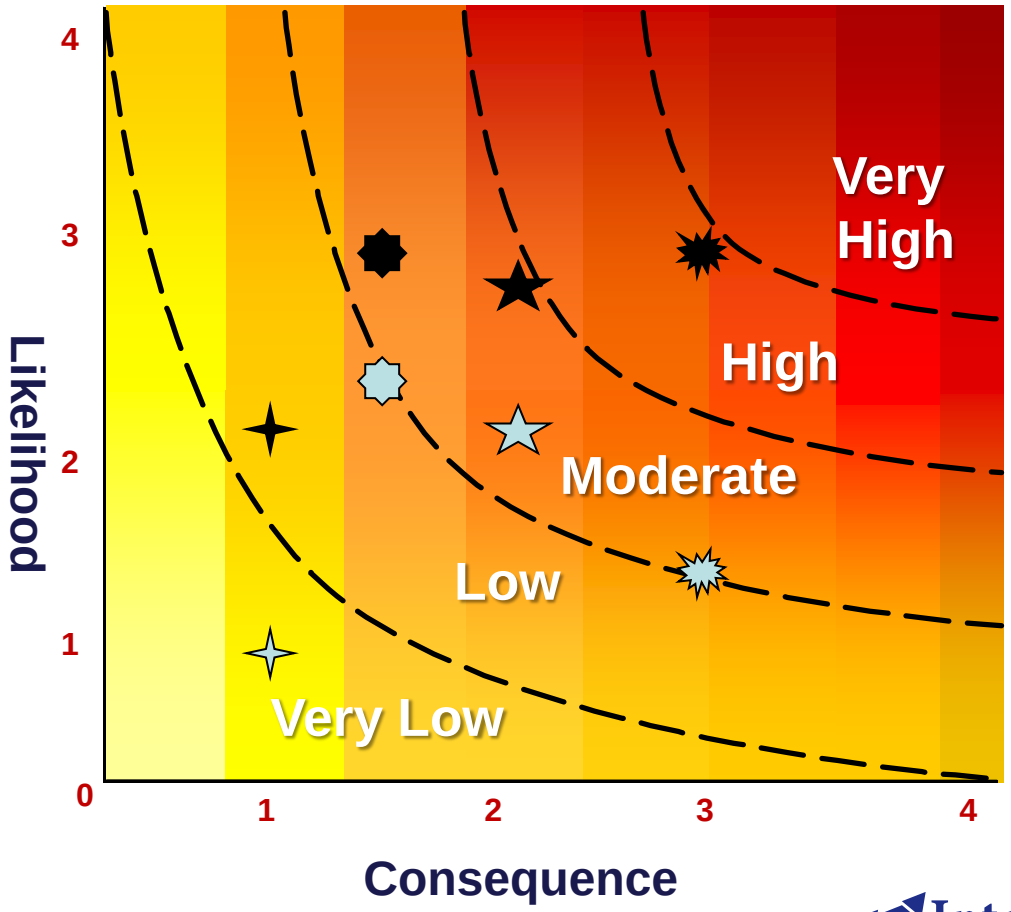
Likelihood – Consequence

Biosafety

Biosecurity

Both need to be addressed



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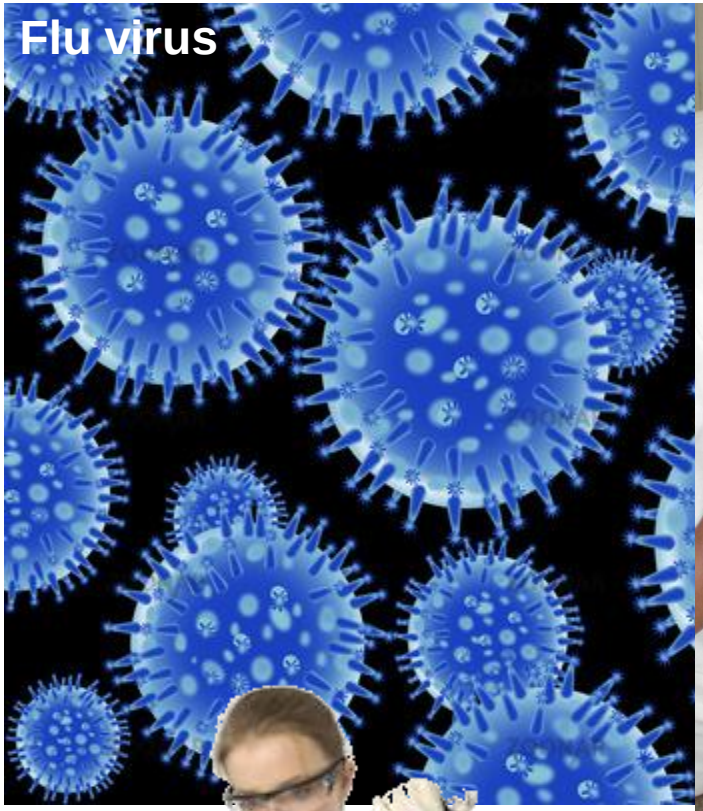
Biosafety RAM

LDRD
LABORATORY DIRECTED RESEARCH & DEVELOPMENT

- Agents
- Procedures



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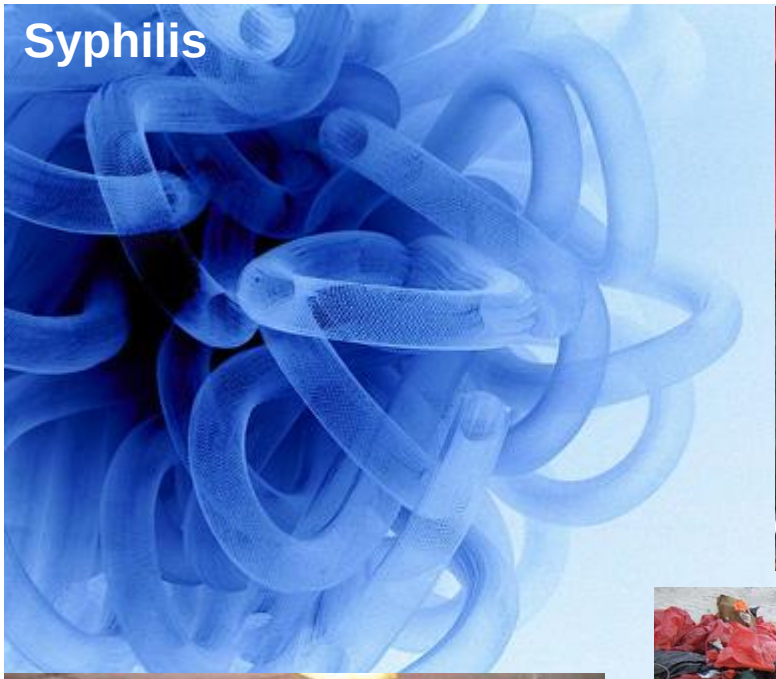
Biosafety RAM

LDRD
LABORATORY DIRECTED RESEARCH & DEVELOPMENT

- Agents
- Procedures



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BioRAM visual impact

Example

Spietz Laboratory

Switzerland

Nipah Virus

Courtesy :Daniel Kümin

Data from Spiez Laboratory Review of Biosafety RAM model (Daniel Kumin)

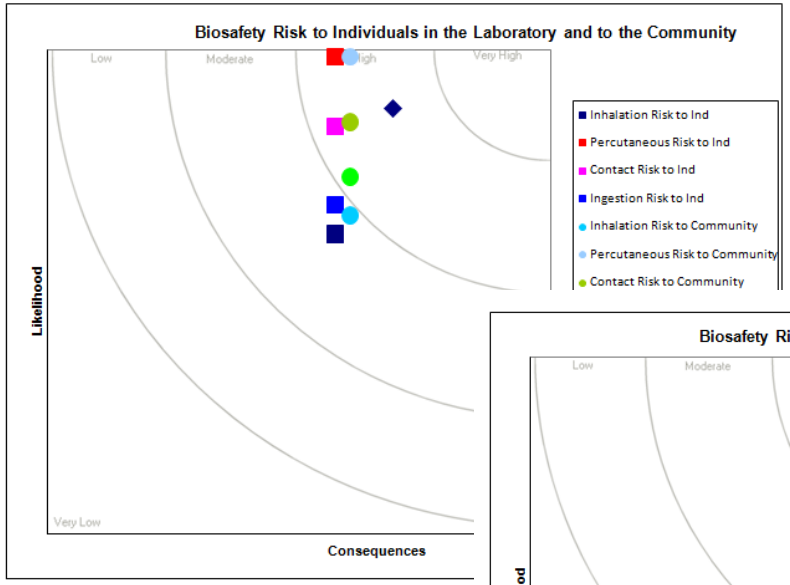

Figure 1: Risks posed by Nipha Virus prior to any implementation of Mitigati

Before mitigation

After mitigation

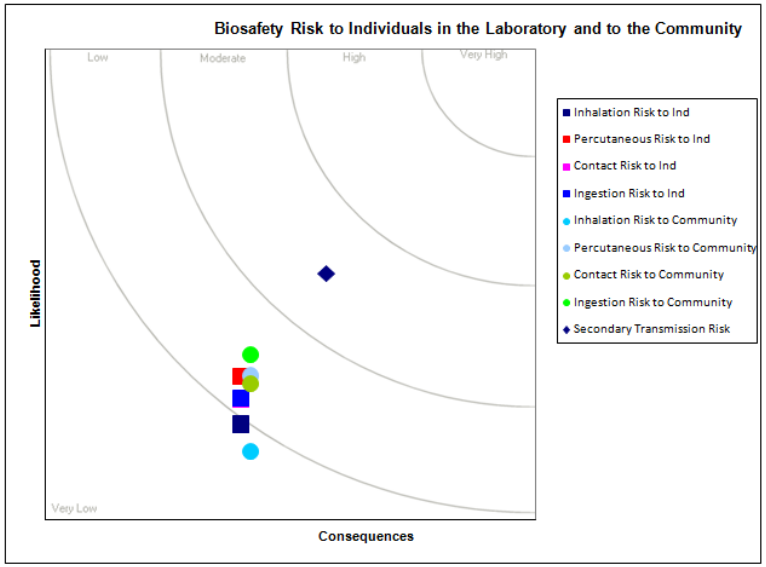

Figure 2 Risks posed by Nipah virus post implementation of procedural, engineering, and ppe control measures

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A TOOL FOR COMMUNICATION

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S trengths

W eaknesses

O pportunitites

T hreats

MANY STRENGTHS
FEW WEAKNESSESS

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BioRAM - SWOT

Combines expertise from many sources

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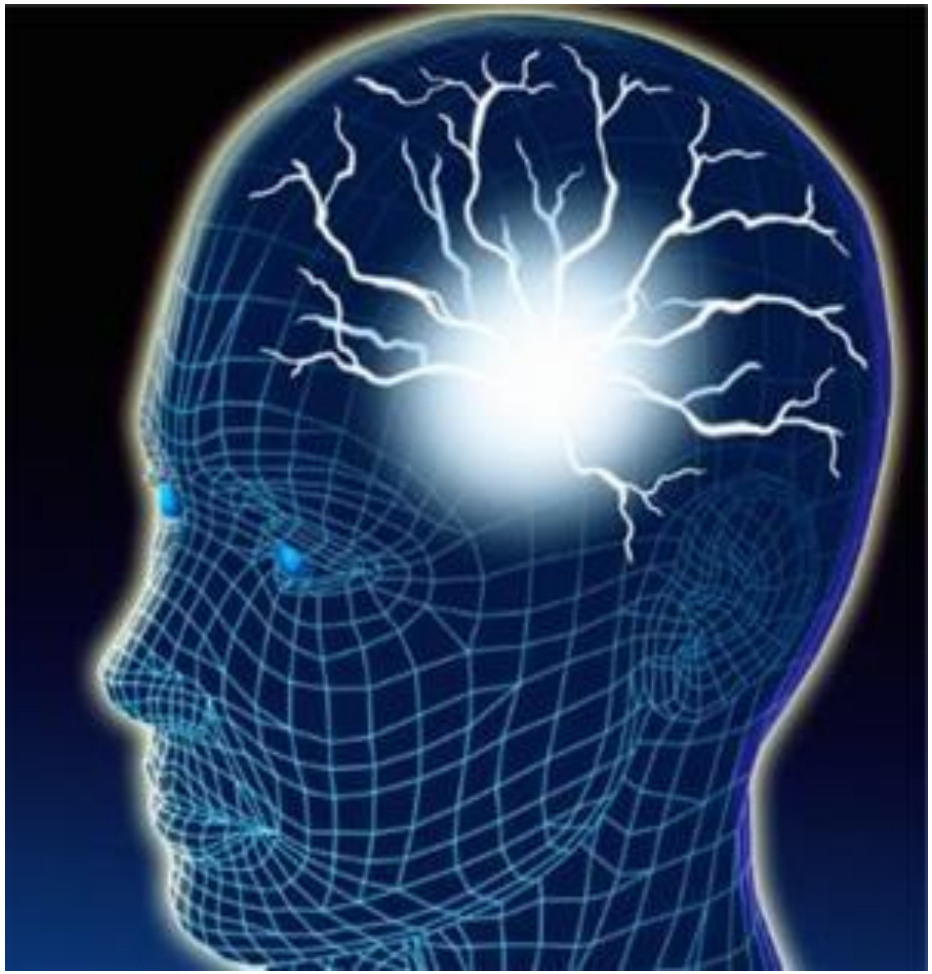
BioRAM - SWOT

Intuitive

Straight forward

Short training

Visual



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BioRAM - SWOT

Time saving

- Same agent - different procedures
- Same procedure - different agent
- Repeated analysis
- Comparison of results

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BioRAM - SWOT

Fast

Takes out years of trial and error for making a good risk assessment

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BioRAM - SWOT

Precise

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BioRAM - SWOT

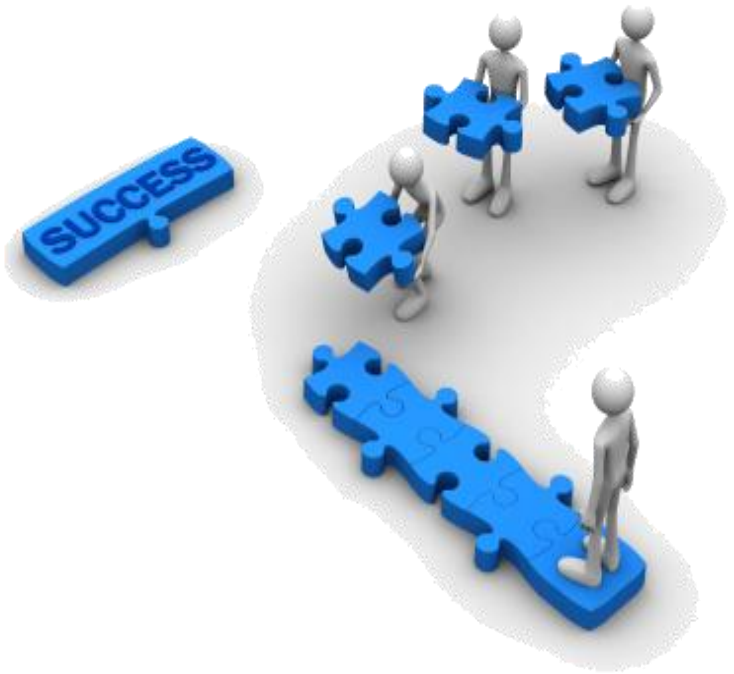
Standardized

Encompasses what many have found relevant

Structurized

Systematic

Prioritizes



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BioRAM - SWOT

Flexible

Allow for interpretation

Allow for own decision of :

- what to mitigate
- when
- how to shape your strategy

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BioRAM - SWOT

Cheap!!

- **Actually – it is free !!!**
  - http://www.biosecurity.sandia.gov/BioRAM/BiosafetyRAMSoftware.zip
  - http://www.biosecurity.sandia.gov/BioRAM/BiosecurityRAM.zip

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BioRAM - sWOT

Clinical labs

"Unknowns"

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BioRAM - sWot

Training needed for full success?

Probably yes

… When is training not needed for mastering a new skill?

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BioRAM - swOT

2011

Chinese, Indonesian, Japanese, Spanish

2012

Arabic, Urdu, French, Dari

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BioRAM - swOT

Have an accepted communication tool

- Up
- Down
- Across

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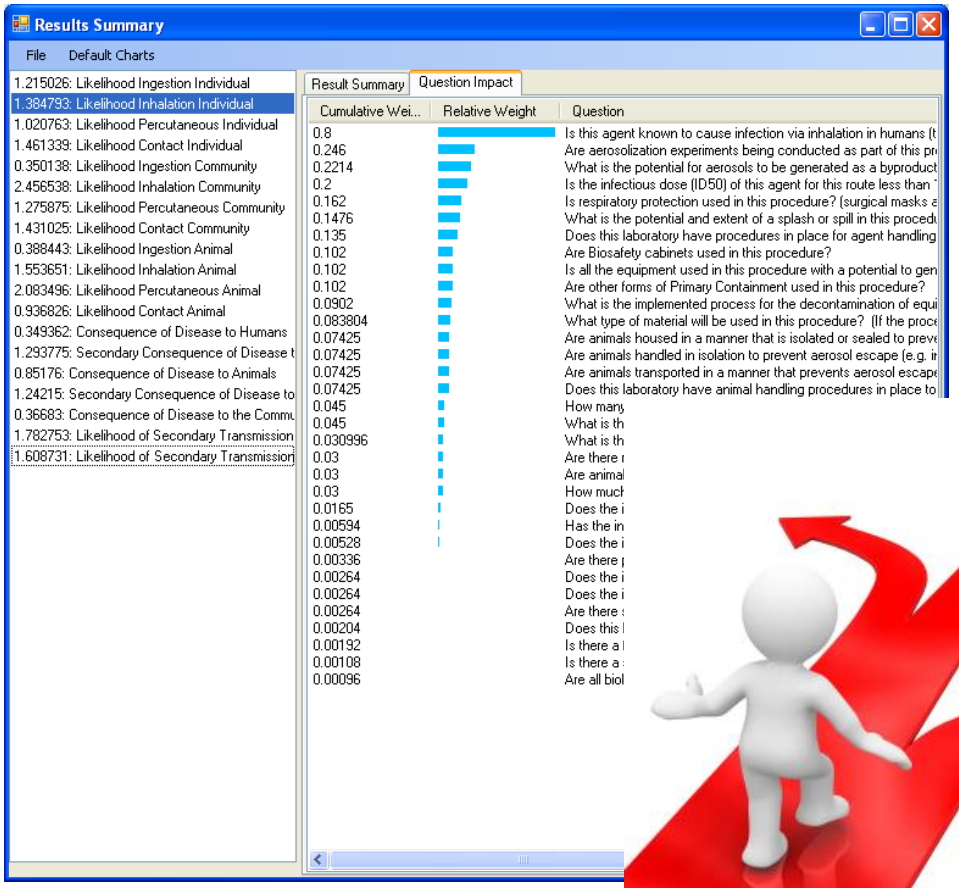
BioRAM - swOt

Prioritizes

Which risk drivers ramp the risk up



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BioRAM - swoT

People "forget" to use their brains

Accepting at "face value" the results of the BioRAM

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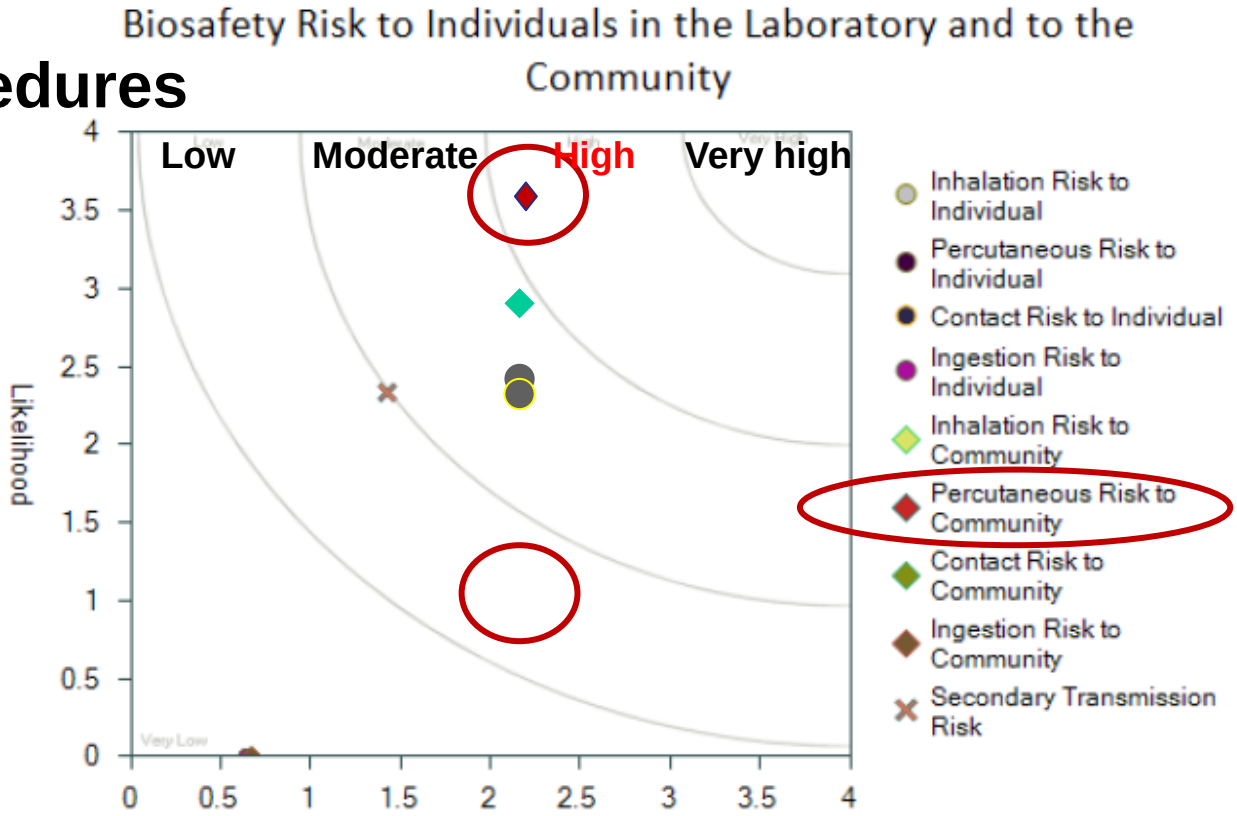
BioRAM – Waste Example

- **Waste procedures**
  - Before
  - After



Is there a waste and decontamination program in place?
0 = There is no waste management and decontamination program at this laboratory
1 = This laboratory has limited procedures in place for waste management and decontamination
2 = This laboratory has some procedures in place for waste management and decontamination, but lacks oversight in implementation
4 = This laboratory has a comprehensive waste management and decontamination program, and well-defined procedures in place

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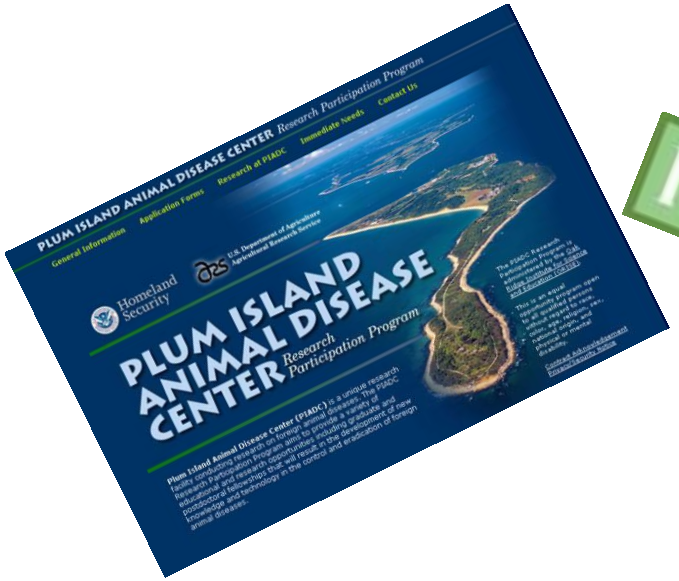
BioRAM during a building project

- To identify important key components in Impact Assessment during a building phase

- To counterbalance Value Engineering and stop contractors in time



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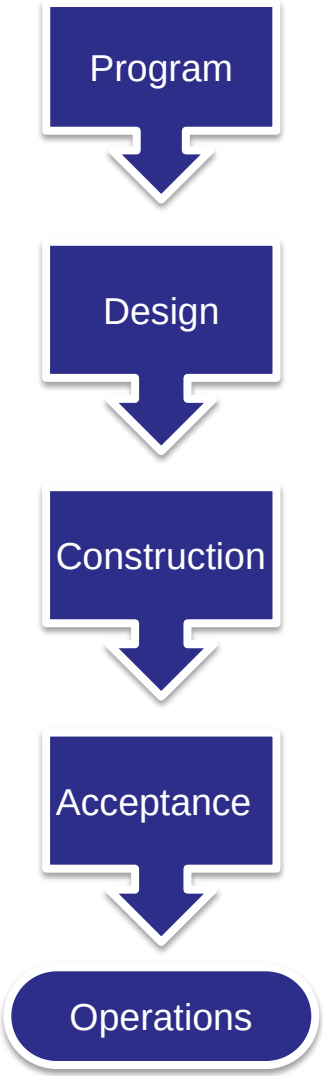
BioRAM during a building project



- **Programming phase.**
  - Compare agents, and make sure that mitigation measures makes sense and is tailor suited to the actual risk
- **Design Phase**
  - Use as a tool to go for different mitigation measures if budget is narrow
- **Construction phase**
  - SOP or engineered design?
  - Use as an evaluation tool for deciding which engineering controls to take out

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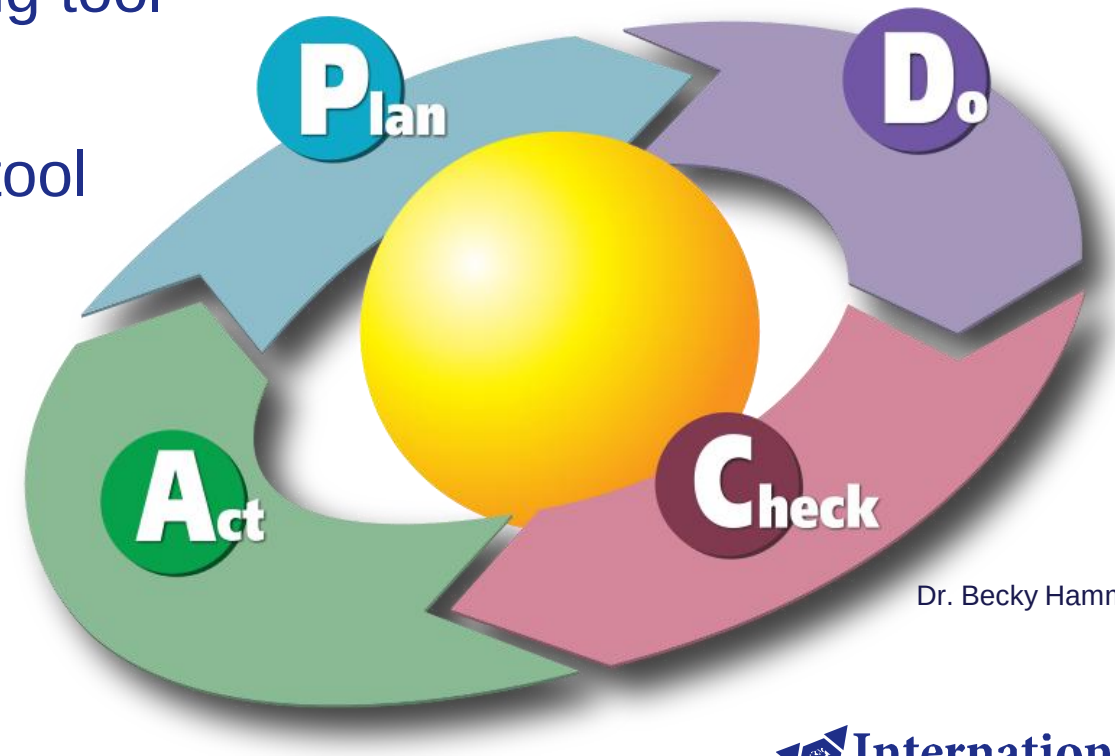
BioRAM
CWA 15793:2008

- **PDCA cycle**
  - As a planning tool
  - As a check tool
  - Reporting



Dr. Becky Hammonds

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CWA 15793:2008

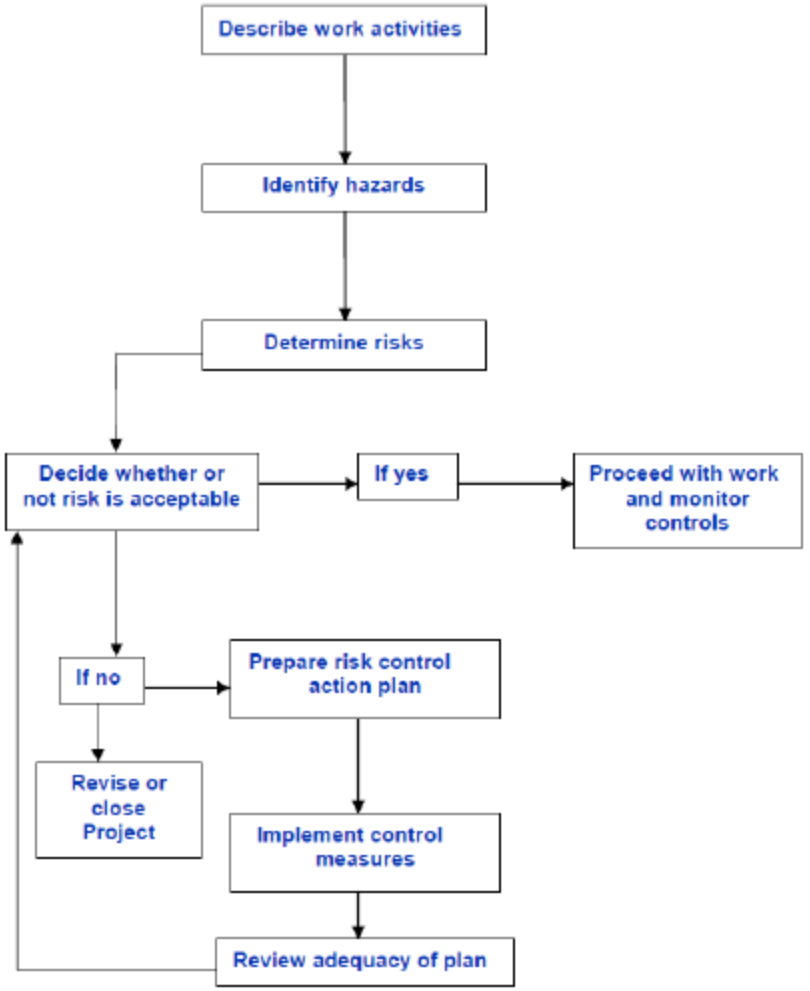
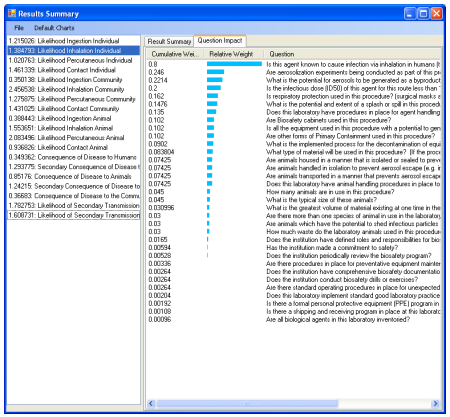


Figure 1 — Risk assessment strategy

Risk Assessment

- Physical Description of Laboratory Environment:
- Describe Procedure:
- Identify Biological Hazards:
- BioRAM results:



- Discuss the results
- Determine Acceptability of Risks:
- Action control plan (mitigation measures):
- Plans for review and validation:

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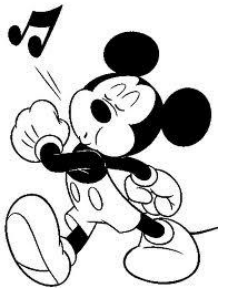
DOES IT MATTER IF IT IS NOT 110% CORRECT?

110%?

- **It depends!**
  - How is it used?
    - **If used as a relative tool, before and after ... it takes out the bias**
  - Use the brain!
    - **GI GO**

110%?



- **The context is important**
  - Comparing
  - Not in absolute numbers
- **We are already used to putting arbitrary numbers on biorisk**
- **And we can only count to 4 !**

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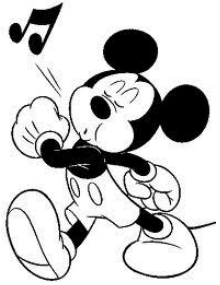
The new unskilled PI

A PI stuck in his old ways

- **Might be so happy with his own knowledge that he will "forget" to call in the other stakeholders**
  - Does he know all there is to ask?
  - Has he gotten lazy and skips some of the questions?

The BSO's



- **WHO?**
  - New BSO
  - New tasks for the old BSO
    - **New expertise areas**
- **A tool for communication with the PI's**

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Communication with PI´s

- **…"It is not me chasing you …**
  - … it is the tool that tells us that this can be done safer!"

- **Outcome:**
  - Closes the discussion about "who is the expert here in my lab – Huh?"

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More than the BSO and the PI

- Too often universities are happy to outsource risk assessment to a single person

- The BioRAM process forces people to work together and get better buy in

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Communication with Management

- **Show "the bang you get for your buck"**

- **Communicating several levels up the chain**
  - Give them a message they can use without diluting the message
    - **"We are *here* this year compared to *there* last year"**
  - Easy way to quantify and communicate an average risk across an institution

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Communication tool to IBC´s

Institutional Biosafety Committee

- **Make a complex topic understandable for non-experts in less than 5 minutes for approval or rejection**

- **If IBC feels timid and unsure, they want more information and postpones decisions**

- **Graphics is understood in a split second**

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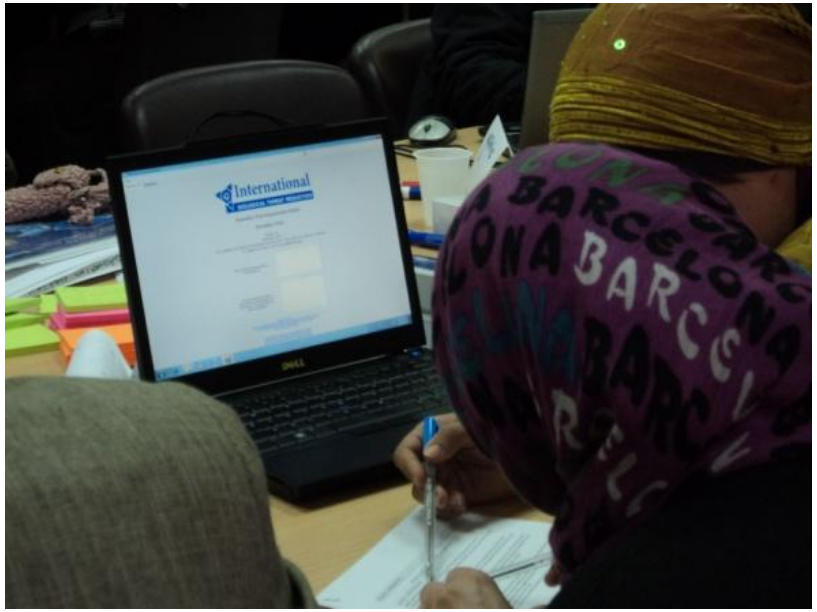
Biosafety RAM

Biosecurity RAM

2 TOOLS



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Laboratory Biosafety Risk Assessment Project (Biosafety RAM)

Risk = *f* (Likelihood, Consequence)

Likelihood

- The likelihood of infection by the agent and the likelihood of exposure through an infectious route based on the procedures and work practices

Consequences

- Of disease from accidental exposure

Risks

- To laboratory workers
- Risk of accidental exposure to human and animal community
- Risks of secondary infection

Laboratory Biosecurity Risk Assessment Project (BioRAM)

Risk = *f* (Likelihood, Consequence)

Likelihood

- The likelihood of targeting a laboratory based upon the agent's potential for malicious use and the likelihood of successful acquisition of the agent from the laboratory

Consequences

- Of disease from malicious release

Risks

- Risks to human and animal community

LDRD LABORATORY DIRECTED RESEARCH & DEVELOPMENT

NIID NATIONAL INSTITUTE OF INFECTIOUS DISEASES

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It is free

We want your input

We need to improve

We can only do this, if even more stakeholders take part in the last tuning of the tool

THIS WAS MADE WITH PUBLIC MONEY

IT WAS DEVELOPED FOR PUBLIC USE

IT NEEDS PUBLIC INPUT TO SUCCEED

Go to: http://www.biosecurity.sandia.gov.. and follow the links

Discussion and Questions

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