

The role of science in developing standards for international trade in honey bee products

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International trade - context

WTO & its agreements came into force in 1995

Prior to this, countries could restrict imports of agricultural products on dubious health grounds, claiming that they represented biosecurity risks

Often disguised barriers to trade – protection of domestic industries against competition from cheaper imports



Sanitary & Phytosanitary Agreement (SPS)

New philosophy – trade cannot be prohibited without good reason – such as protecting human, animal and plant life or health

Requires that import restrictions must be supported by scientific evidence, and be based on a risk assessment or international standard

SPS measures to be applied only “To the extent necessary”

- to manage the identified risk



Role of International Organisations in SPS

Three international organisations identified under the SPS agreement for developing international standards for safe trade

- FAO/WHO Codex Alimentarius Commission (Codex)
 - Protecting consumer health and facilitating fair practices in food trade
- FAO International Plant Protection Convention (IPPC)
 - Plant health
- World Organisation for Animal Health (OIE)
 - Animal health and zoonoses



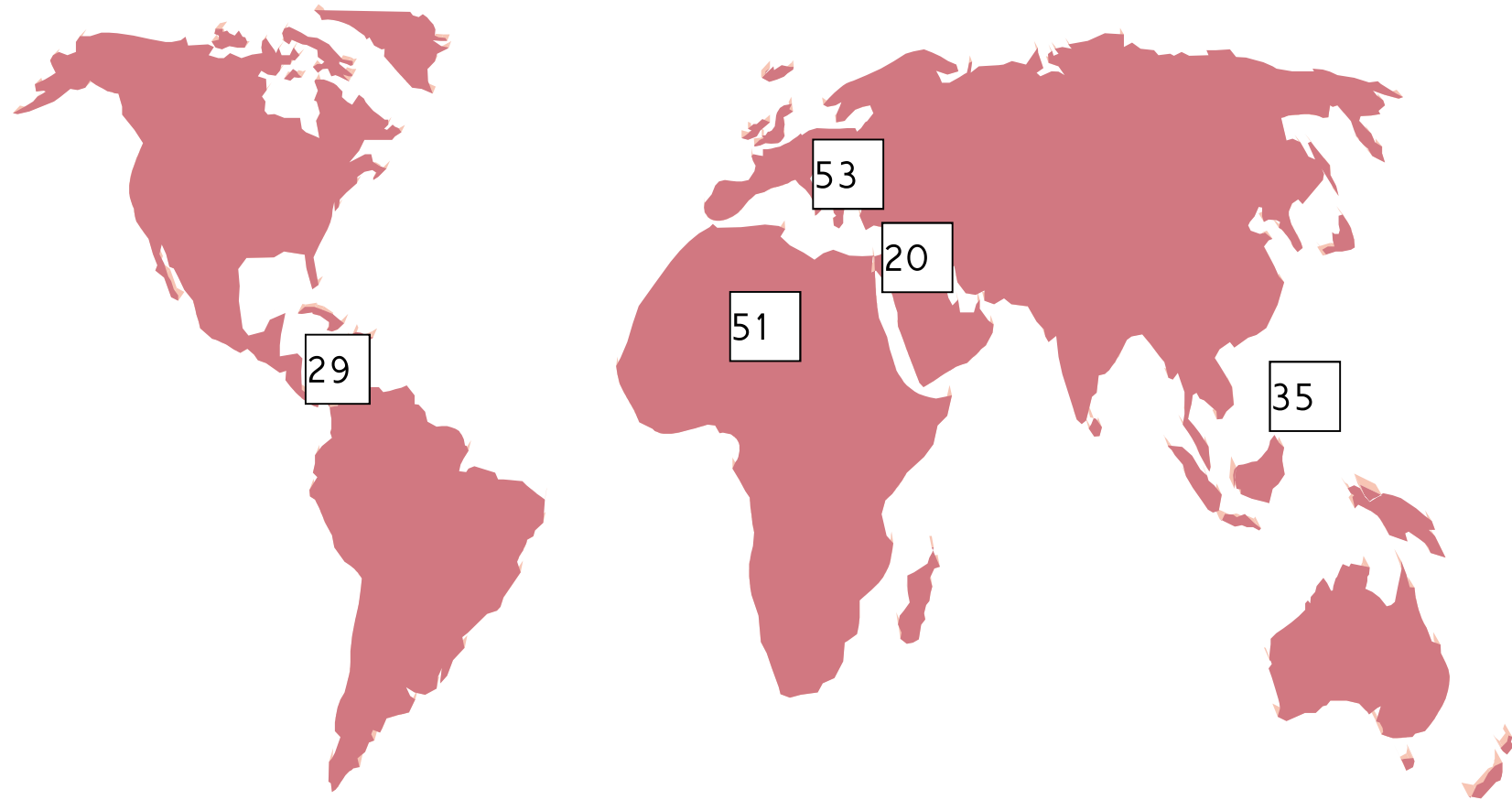
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- An intergovernmental organisation
 - Founded in 1924 by 28 countries
 - Predates the U.N.



World Organisation for Animal Health

- Common name adopted by the International Committee on May 2003
- Organisation Mondiale de la Santé Animale
- Organización Mundial de Sanidad Animal

The OIE has 178 Members



Americas 29; Africa 51; Europe 53; Middle East 20; Asia Pacific 35

OIE international standards ...

OIE develops health standards for trade in animals and animal products

New texts are developed by working groups

Terrestrial Animal Health Standards Commission consider new texts or revisions of current texts

Circulated to OIE Members for comment

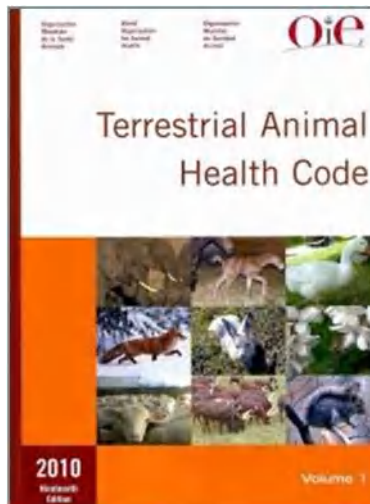
Comments must be submitted through the country delegate to the OIE



OIE international standards ...

Adopted by OIE Member Countries during the General Session each May

Published in Terrestrial Animal Health Code



Role of risk analysis under SPS

If there is no international standard,
or if the national LOP is higher than that implied
under an existing standard,
then must do a risk analysis



Risk analysis guidelines

Risk analyses should be carried out following the guidelines in the *OIE Code*

SPS requirements for a “proper” risk analysis :

- ‘based on science’
- Transparent
- Objective



Transparency & Objectivity

Risk analysis conclusions should be supported by a reasoned and logical discussion

Clear identification of

- limitations of available information
- assumptions

Completed analysis should be

- referenced
- subjected to peer review



OIE-listed diseases of honey bees

Acarapisosis

American foulbrood

European foulbrood

Small hive beetle infestation (*Aethina tumida*)

Tropilaelaps infestation

Varroosis



Example: European foulbrood in honey

OIE Standards exist for

- Live bees
- Eggs, larvae, pupae
- Used beekeeping equipment

Little detail for bee products

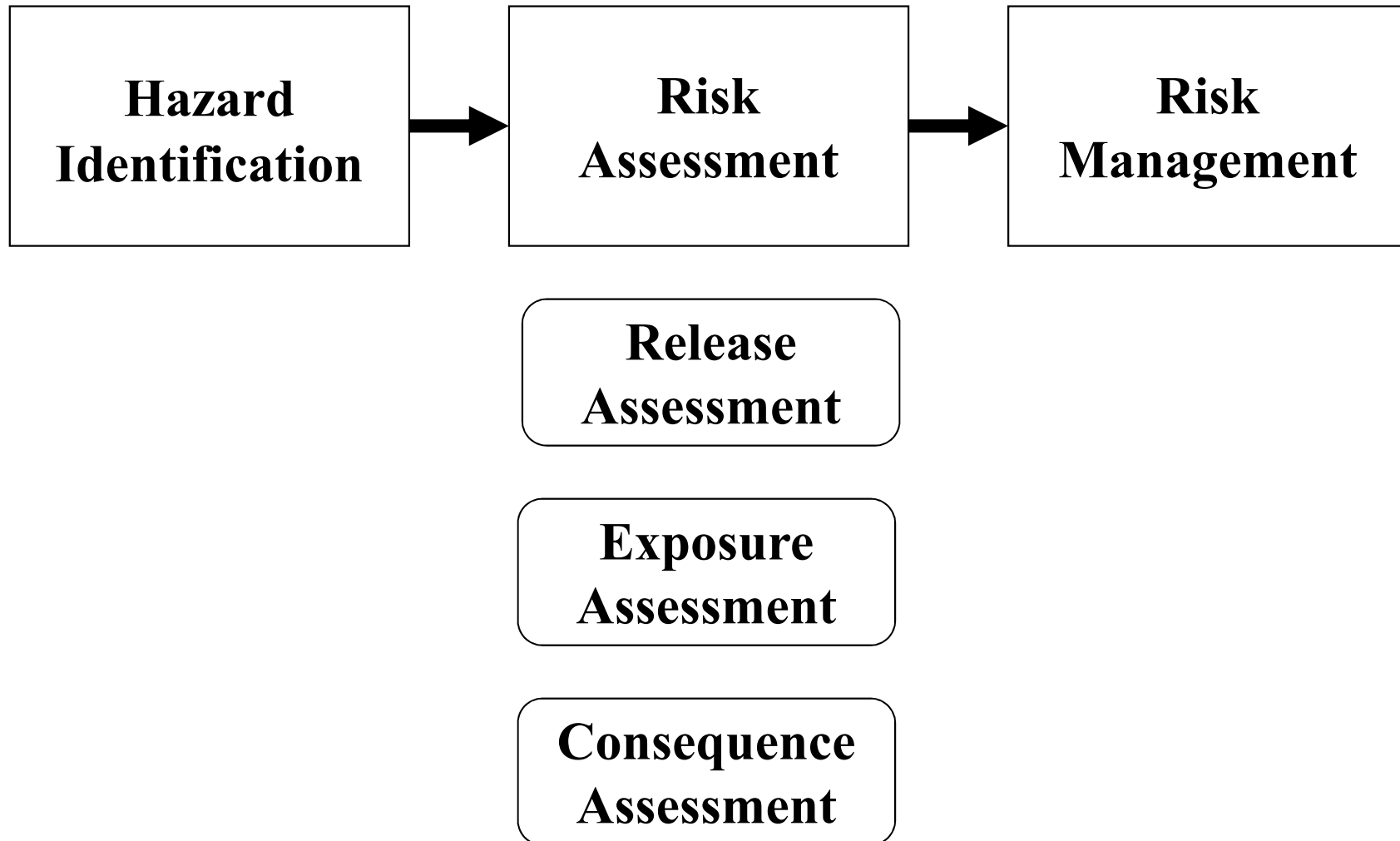
- Country or zone free from EFB
- “treatment to destroy EFB” (*under study*)

Very few countries claim to be free

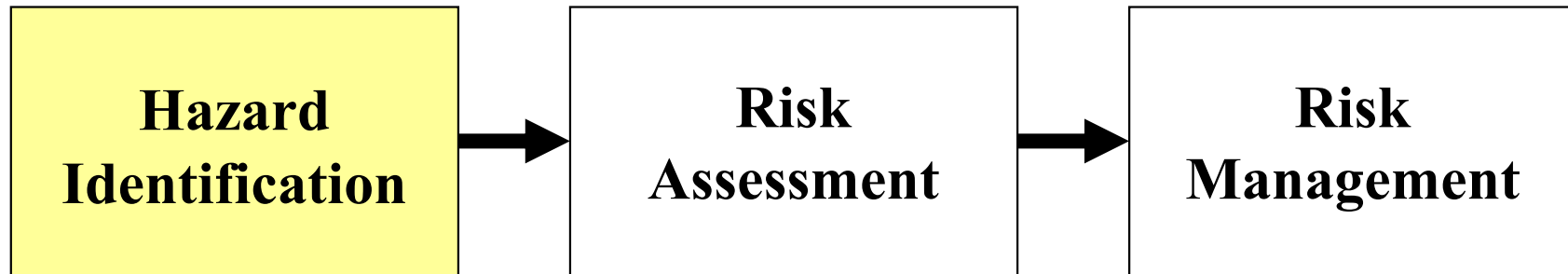
- NZ, WA & Pacific Islands



The OIE Risk Analysis Framework



The OIE Risk Analysis Framework



What organisms are likely to be associated with the commodity?
Consider the nature of the organisms, and how they are transmitted

**Release
Assessment**

**Exposure
Assessment**

**Consequence
Assessment**

European foulbrood epidemiology

Melissococcus plutonius

Anaerobic bacterium, grows in larval midgut

Larvae infected by nurse bees via contaminated brood food

Bacteria create abnormal demand for food

Nurse bees detect & eject infected larvae

Larvae may die if inadequate nurse bees or brood food

Larval death from 4 days up to pupation

EFB : hazard identification

Larvae that survive EFB deposit bacteria in faeces when they pupate

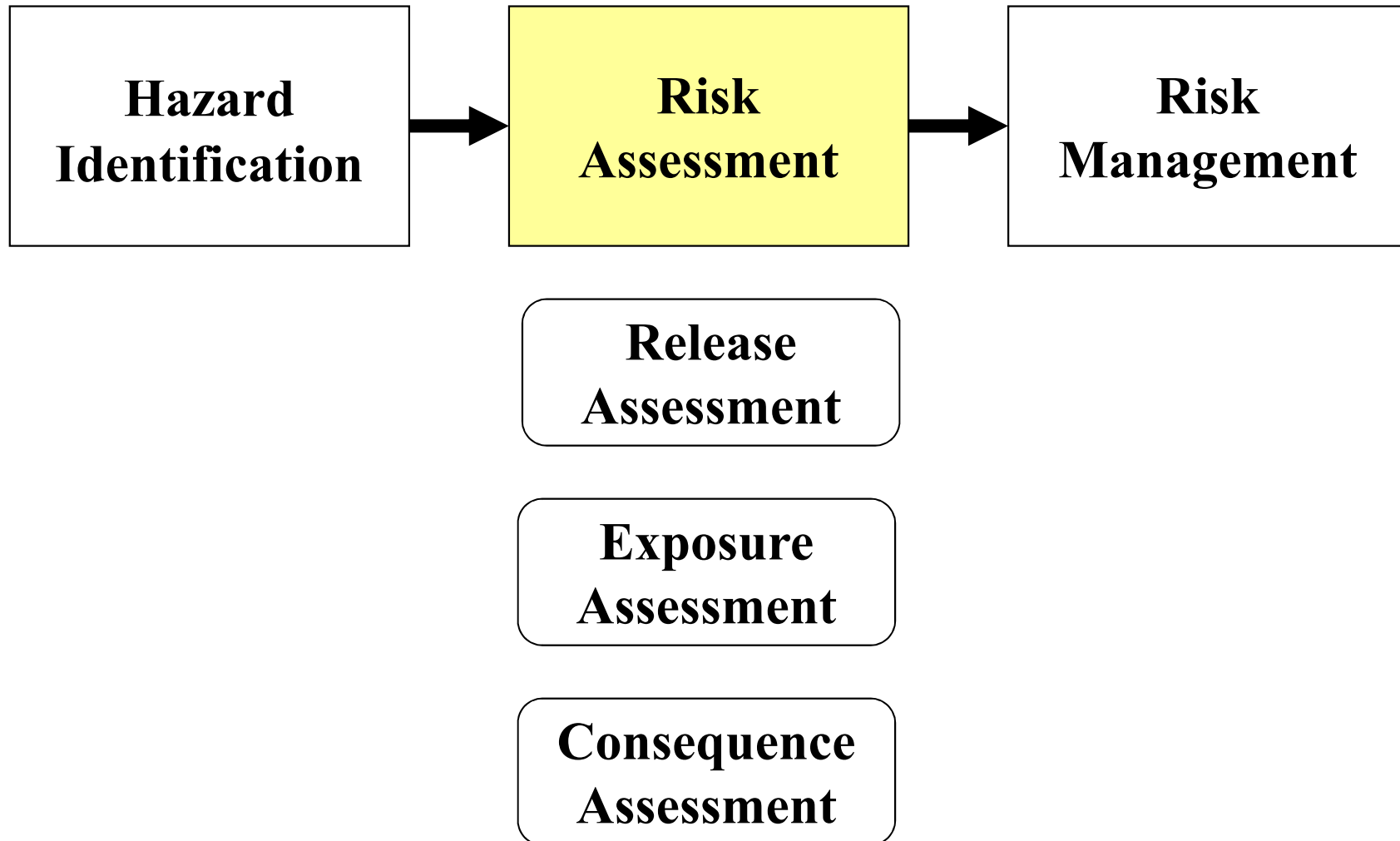
EFB can overwinter on sides of cells or in faeces and wax debris on hive floor

Remains viable in stored honey for several months

Conclusion: EFB is considered to be a hazard in the commodity (honey)



The OIE Risk Analysis Framework



The OIE Risk Analysis Framework



**Release
Assessment**

**Exposure
Assessment**

**Consequence
Assessment**

What is the likelihood that the imported commodities harbour the organism?

EFB in honey

Few reports in the literature

Australia

- Honey samples from a small number of artificially infected hives (Wootton, 1981)
- Bulk honey from endemic areas in Australia (McKee et al, 2003)

Switzerland

- Brood honey samples from apiaries in endemic area (Forsgren et al, 2005)



Release assessment conclusion

Highest levels in brood honey

Lower likelihood of presence in non-clinical hives and non-brood samples

Maximum reported level in honey is 3,300 cfu/ml in clinical hives

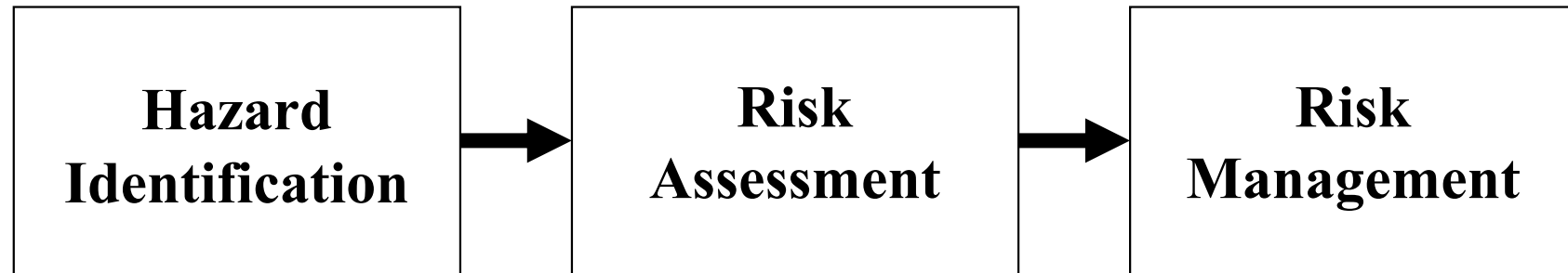
- Wootton (1981)

Bulk honey collected from multiple hives is expected to have substantially lower levels – dilution effects

Conclusion: There is a low likelihood of release in imported honey



The OIE Risk Analysis Framework



**Release
Assessment**

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Assessment**

How would susceptible species be exposed to the organism if it were introduced in the commodities?

EFB Exposure assessment

Imported honey may be fed to bees

Bees will actively seek honey

What about honey in imported food products?

- Honey attractive at concentrations down to 2%
(Goodwin, 2004)

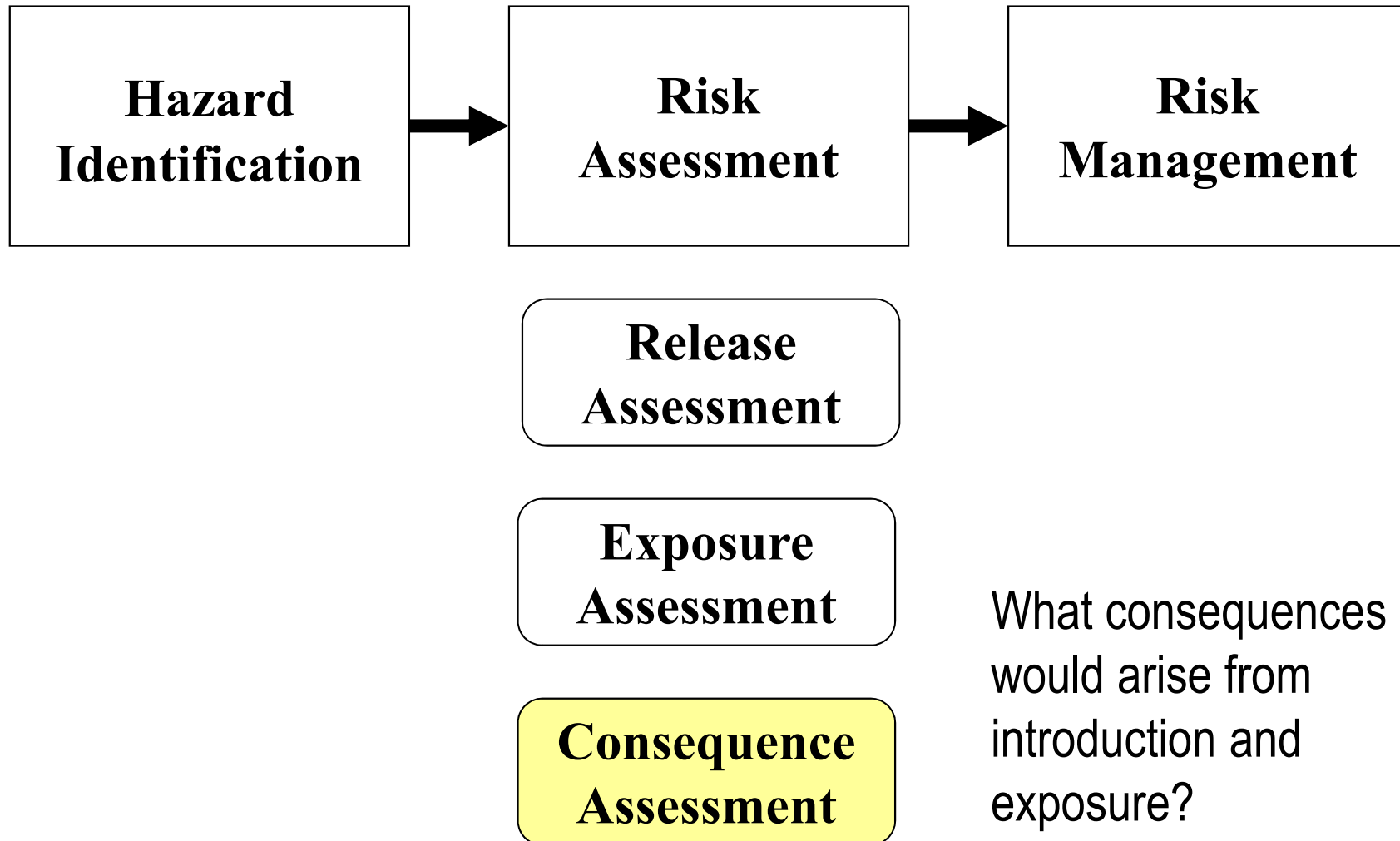
But what is the infectious dose?

- scope for quantitative modelling?

Conclusion: Likelihood of exposure is significant



The OIE Risk Analysis Framework



EFB Consequence assessment

Some reports of colony collapse without treatment

- Depends on nectar flows and nurse bee/larva ratios

Treatment with oxytetracycline is common

- Antibiotic cost and negative trade effects

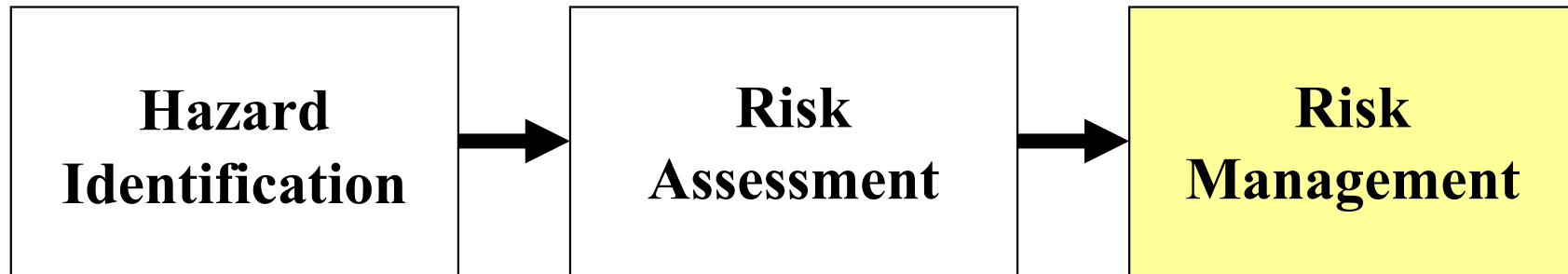
Likely to be significant impacts on pollination

- Availability, price of hives

Conclusion : Impacts on the beekeeping industry may be significant



The OIE Risk Analysis Framework



**Release
Assessment**

**Exposure
Assessment**

**Consequence
Assessment**

What options are available for managing the risk?

How effective are they?

How does the residual risk compare to the ALOP?

Risk management options for EFB

Treatments to destroy EFB (limited data)

- Heat
- Irradiation

Quality of the honey may be significantly affected

Data limitations complicate determining the appropriate level of risk management



Inactivation of EFB by heat

1912 : White

- ‘thermal death point’ : 79°C for 10 minutes
- Pasteurisation accepted as effective

1981 : Wootton

- “thermal death times” at temperatures up to 80°C

2001 : Ball (unpublished)

- More information on higher temperatures
- “extinction time”

Conclusions

OIE has developed a number of standards

Future working groups may be able to address areas that are currently “under study”

SPS measures should be applied only “To the extent necessary”

Data limitations hinder attempts to quantify risk levels and the effect of measures

Acceptable risk remains difficult to define





Thank you for your attention