What is risk – a food setting

- **Risk**: a function of the likelihood of an adverse health effect and the severity of that effect, arising from exposure to a hazard in food.

  - No risk because person is not exposed to hazard.
  - Risk because a vulnerable person is exposed to the hazard.

  - No risk unless there is exposure to the hazard.
Risk management objectives?

- Risk management - an evidence informed process aimed at managing or mitigating risk to consumers.
- Objectives
  - Keeping consumers safe
  - Building confidence
  - Maintaining trust
- A ‘moderator’ between manufacturer and consumer
- Can be delivered as
  - food regulation
  - communication to consumers

What do we do to manage risk?

- Risk management - an evidence informed process aimed at managing or mitigating risk to consumers.
- Techniques
  - Avoid e.g. do not use the material, do not eat the food
  - Reduce hazard e.g. reduce concentration, modify structure or composition to reduce activity
  - Reduce exposure e.g. protect or use barrier, reduce time of exposure, isolate hazard, limit use e.g. agrichemicals
  - Accept and communicate – inform to avoid e.g. allergens or limit consumption e.g. mercury in fish advice to reduce consumption

A graduated response to management of food risks

<table>
<thead>
<tr>
<th>Food safety issue</th>
<th>Higher risk</th>
<th>Stronger intervention</th>
<th>Regulatory measure/ intervention</th>
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<tbody>
<tr>
<td>Acute, direct effects on health - e.g. food poisoning</td>
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<tr>
<td>Chronic, longer term effects on health e.g. Low level agri-chemical residue, microbiological contaminants, anti nutritive factors</td>
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<tr>
<td>Preventative health issue long term indirect effects on health e.g. overall diet</td>
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<td>Specific dietary issues</td>
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<tr>
<td>Consumer choice, ethical issues e.g. environmental, animal welfare</td>
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Mandatory action
- e.g. prohibition, product recall, restricted harvesting areas

Mandatory standard
- e.g. set residue level
- e.g. labelling - provide food storage, preparation instructions
- e.g. require labelling – provide ingredient and nutritional information

Public information campaigns

Market forces
- e.g. industry codes of practice, voluntary trademark schemes

What if the perception of risk and the real risk are at odds?

- This is not uncommon
  - Anti vaccine movement
  - Opposition to GM foods
  - Pesticide concerns outweigh microbial contamination concerns
- People faced with new technology have difficulty in assessing risk
  - Suspicious of science
  - Find counter views appealing
  - Can easily be outraged

Applying risk management to nano technology

What does the science say?

- The risk manager must have something to go on!

Nano product risk – is it real?

- Is there a hazard?
  - Theoretical or actual?
  - Has it been characterised?
- Is there exposure?
- Is there risk and is it able to be managed?

- New science and technology - an uphill journey

The ‘somewhat’ knowns

FSANZ papers (nano in food materials/additives, nano materials in packaging)
- Science is limited – few dietary studies, increasing number of toxicity focussed studies
- What science there is suggests risk is not high
- But we cannot be sure!
- And consumers want certainty about their questions and issues!
- And dietary effects are on their mind!
The consumer viewpoint

• Many consumers and consumer groups are concerned about nano
• The issue is ‘uncertainty’ of the science and particularly its use in consumer goods (foods, cosmetics)
• In the absence of certainty and a convincing consumer benefit an unknown science is likely to be seen as ‘untrustworthy’.

Is there a risk management solution?

1. Science: more and robust science needed to support decisions. Suggest we listen to consumers and build evidence that answers their questions
2. Addressing risk - where evidence is clear or solution is straightforward –also need to be communicated e.g. nano immobilised in packaging
3. Lowering elevated perceptions of risk, understanding benefits
   a. Good science communications
   b. Responding to concerns and making relevant science public
   c. Engaging positively with consumer organisations

The materials science and food science communities have a big responsibility!

To provide evidence:
• Sufficient to prove the case
• That the regulator will accept
• That the risk manager can use
• That the community will trust
A demonstrable benefit makes all the difference!

The perceived risk is outweighed by the reduction in immediate risk ....

Can we afford to retreat from nano or from S&T itself? NO!

1. Consumer relevant science research i.e. evidence of safety and benefit is essential
   - Different focus from acceptability in scientific community?

2. Supported by communication
   - e.g. product information and product benefit are critical – determined and sustained effort required

And it’s the long game.....

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