New Biocide Actives, Formulations and Treatment Systems – Developments & Commercialisation

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To profitably produce cost effective durable wood-based materials from a sustainable plantation grown timber that will meet the ‘fitness for purpose’ performance requirements as defined in the New Zealand Building Code
### Topics

- Actives
- Formulations
- Processes
- Treated wood product
- Challenges

### Actives

**Insecticides**
- Permethrin, deltamethrin, bifenthrin
- Imidacloprid
- Thiacloprid

**Efficacy**
- Highly active so low concentrations in wood

**Challenges**
- Extraction from wood
- Analytical methods
- Approvals in relevant Standards
Actives cont’d

- **Fungicides**
  - Copper compounds
  - Azole compounds
- **Efficacy**
  - Synergistic combinations
- **Challenges**
  - Demonstration of bioequivalence

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Actives cont’d

- **Future**
  - ‘Novel’ actives
    e.g. Locked- in- boron (LIB), Chitosan
  - Non-biocidal ‘treatments’
    e.g. wood modification
  - Reassessment of actives/formulations
    e.g. hazardous classifications, unacceptable ‘risks’
Formulations

- Typically combinations of actives
- Water or hydrocarbon solvent carrier
- Additives (colorants, water repellents, ‘penetrating agents’, novel solvents)

**Opportunities & Challenges**
- Understanding effect of additives
- Demonstrating bioequivalence, e.g. alternative hydrocarbon solvents, micronised copper; aqueous vs hydrocarbon solvent carriers

Processes

**Challenges**
- Penetration
  - Macro-distribution (getting the process right)
  - Micro-distribution (process, formulation, timber species)
- Effects on wood processing /handling
  - Re-drying timber after treatment
  - Solvent flash off (OSH)
- Wood properties, e.g. dimensional change
Treated wood product

- Efficacy (insect and fungal decay)
- ‘Fitness for purpose’ is much more than protection from ‘bugs’
- Different timber products

**Opportunities & Challenges**
- Data to support all ‘fitness for purpose’ requirements
  - e.g. gluing, painting, fastener compatibility etc
- Safe handling
- Disposal

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**Challenges** (work in progress and what to look out for)

- **Regulations**
  - Hazardous properties e.g. CCA, TBT, solvents
    - Health & safety
    - Disposal
  - Acceptability in overseas markets
  - ‘Green ’ buildings

- **Standards**
  - Clarity and process

- **Performance**
  - Service life
    - Predictive tools and extrapolation of data
    - History of use
    - Risk assessments
Thank you

Any questions?