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Perspective on Alternative Preservatives

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Focus

- Historical Development of the Alternatives in Europe
- Status Quo
- Perspectives

Historical Development

- Building Codes/Building Practices
- Treatment Standards
- National Legislation/Regulations

Building Codes/Building Practices

- Germany: All **constructional lumber** (related to the strength of a building) must be treated preventatively against insects (beetles) and decay.

- Great-Britain, France, Belgium, Poland:
  Not required but mostly treated

Treatment Standards

Risk Class	Risk	Service Conditions	Treatment	Preservatives
(0)	(None)	Interior, Dry Fully covered or fully accessible	(None)	(None)
1	I	Interior, Dry	Short-Term/Long-Term Dipping Double Vacuum, Vacuum Pressure	Solvent-borne, Water-borne Fixating, Non-fixating
2	I, D	Interior, Damp (Ext. without weathering)	Short-Term/Long-Term Dipping Double Vacuum, Vacuum Pressure	Solvent-borne, Water-borne Fixating, Non-fixating
3	I, D, W	Ext. weathered Above ground	Long-Term Dipping Double Vacuum, Vacuum Pressure	Solvent-borne, Water-borne Fixating
4	I, D, W, GC	Ext. weathered, Ground Contact, Fresh Water	Vacuum Pressure Treatment	Water-borne, (Creosote)
I = Insect, D = Decay, W = Weather, GC = Ground contact				

Treatment Standards

Conclusion 1:

- **Middle-European** market for Construction Lumber historically was and still is a non-pressure (“Dip”) market
- **Middle-European** market for non-pressure preservatives is significantly higher than for pressure applied preservatives

Treatment Standards

Conclusion 2:

- **Northern-European/British** market for Construction Lumber historically was and still is a Double-Vacuum and Vacuum Pressure market,

Treatment Standards

Non-pressure preservatives historically

(Middle-Europe):

- Phase 1: Silico-Fluorides, CCB, CFB, PCP
- Phase 2: (PCP), CFB, CCB, Borates, CX (Emulsions)
- Phase 3: (CX), (Borates), Emulsions

Treatment Standards

Preservatives for Constructional lumber: historically (Northern-Europe/Great Britain):

- Phase 1: CCA, Solvent-borne Organics
- Phase 2: (CCA), ACQ, CBA, CX, Water borne Organics, (Solvent-borne Organics)

Development Vacuum-Pressure Market

Conventional Vacuum-Pressure Markets:

Poles, Ties, Garden & Landscaping

Preservatives historically:

- Phase 1: Creosote, Mercury (Kyan)
- Phase 2: CCA, CCB, Creosote
- Phase 3: (CCA), (CCB), (Creosote), ACQ, CBA, CX

Legislation/Regulation

Historical: Selective, National Actions

- Germany: Warning issued by BGA in 1990 with regard to the use of Cr (IV) containing preserva-tives started a discussion Europe-wide
- Consecutively restrictions and phase-out plans were established or total bans were enforced

Legislation/Regulation

Fields of Concern: Cr (VI)

Cancerogenic

Mutagenic

Teratogenic

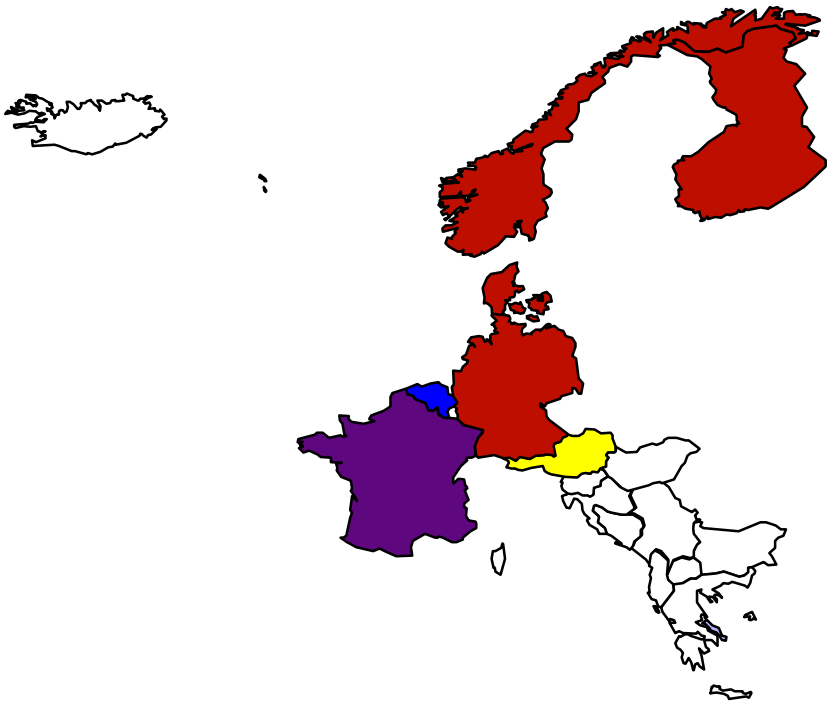
Sensitizing

Legislation/Regulation

Fields of Concern: Cr (VI)

Worker Exposure
Consumer Exposure
Ground-water Contamination
Disposal

European Restrictions of Cr and As containing wood preservative products



Legislation/Regulation

European Legislation/Regulation will overrule National Legislation/Regulation

European Standards

European Biocidal Product Directive

Hazardous Waste Directive

Volitile Organic Compounds Directive

European Biocidal Product Directive

- European law
  05/14/98
- National law
  05/14/00
- **Inventory of existing product**
  March 2002
- Start of reevaluation of products
  March 2002
- Transition period for phase-out product ends
  March 2005
- All marketed products must be reevaluated
  March 2010

Hazardous Waste Directive

Wooden Products will be classified as hazardous waste (if they contain)

- > 1000 ppm or > 0.4 kg/m3 of Arsenic compounds
- > 1000 ppm or > 0.4 kg/m3 of Chromium VI
- > 250,000 ppm or > 100 kg/m3 of Copper compounds

•CCA treated wood products:
Hazardous waste

•Cr/As free products:

•Non-Hazardous waste

Conclusions - Perspectives

- Due to the described situation alternative preservatives are widely used in Europe
- Copper-based, Cr/As-free products have been proven as being effective replacements for CCA for above-ground and ground-contact applications.
- Metal-free systems will gain additional importance in above-ground applications.
- Solvent borne organics will be almost replaced by water borne emulsions

Conclusions - Perspectives

- Potential for improvement of existing alternative products (Fixation, Penetration, Water Repellency etc.)
- Enhancing wood properties could be achieved by combining a biocidal treatment with other chemicals or other processes e.g. with resins or oil treatments
- Alternative preservatives will be developed and used for the treatment of composite products

Conclusions - Perspectives

- The introduction of new active ingredients for wood preservatives will become more difficult as a result of the European Biocidal Product Directive.
- Modified timber, especially heat treated timber will be more commercialized.
- Actual developments on new treating processes are not yet ready for industrial uses (e.g. costs, practicality of super-critical fluid treatment)

Conclusions

- The influence of our industry on the european legislation is only limited
- Alternative preservatives can help to give a positive picture of the wood preserving industry
- The use of alternative preservatives helps to avoid the replacement of wood through competing building materials

Thank You!!