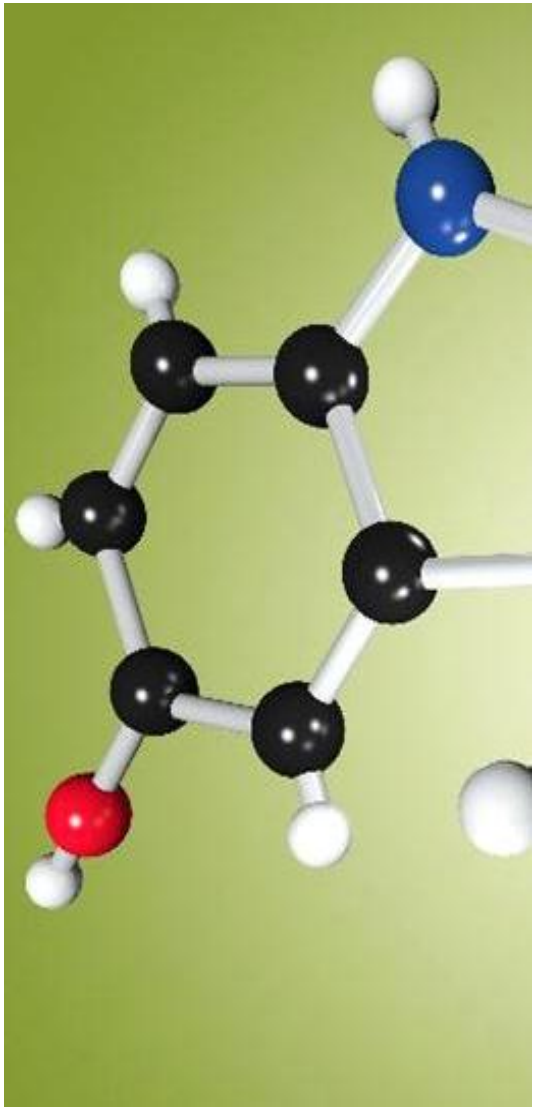

AFIRM Chemical Guidance Document

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AFIRM Seminar, Vietnam

15th November 2012

The Author

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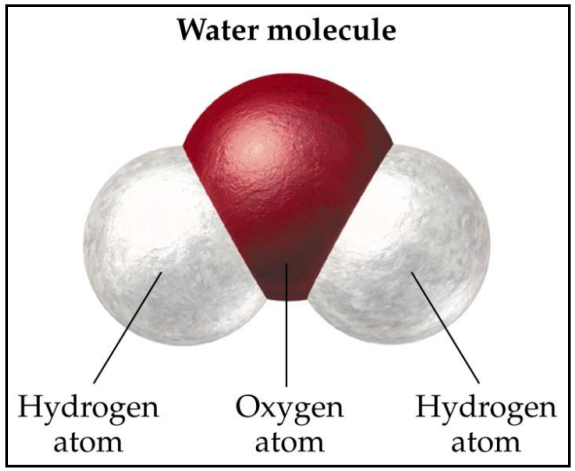
A world renowned chemical expert

A highly valued advisor to the footwear and apparel sector

It’s not a chemistry lesson!

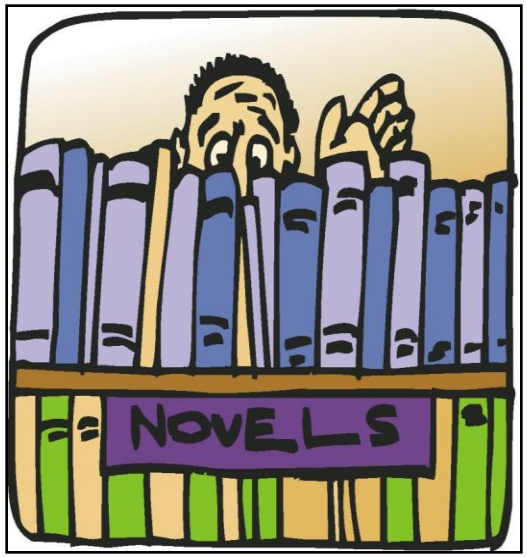


My Job: To tell you what is in the document

<u>You</u> don’t need to understand the detailed chemistry but …….

you need to understand the importance of chemical detail

The Document



It is not a novel…….

…..it is a fabulous resource for experts in your team

The Aim

What's in there?

- Chemicals associated with textiles
- Chemicals associated with leather
- Chemicals associated with polymers
- Process Chemicals
- Adhesives / coatings
- Printing

What's in there?

- The Chemicals in every type of formulation:-
  - Dyes
  - Lubricants
  - Softeners
  - Resins
  - Anti-stats
  - Flame Retardants
  - Water-repellents
  - Anti-microbials
  - Pigments
  - ……

Forget the chemicals for a moment…..

…..it is a an excellent text book for understanding textile and leather manufacturing processes

Beyond RSL Compliance

- EVERYTHING you need to know about apparel and footwear chemicals
- RSL compliance
- Chemical management **best practice**

An Holistic Approach

- Aimed at reducing chemical consumption and chemical emissions and not just meeting Restricted Substance Standards

Environmental Impacts

- A **sense of perspective** given for different products and processes
- Indicative water and energy consumption for most common processes

The Importance of Full Information

Concentration	Typical Composition of Flame Retardant Formulation
15 g/l	Polysiloxane formulation
20 g/l	Stearylurea formulation
2 g/l	Phosphoric acid ester formulation
20 g/l	Melamine resin
70 g/l	Dimethylol dihydroxy ethylene urea resin
25 g/l	Phosphoric acid
400 g/l	Alkylphosphonic acid ester
458 g/l	Water

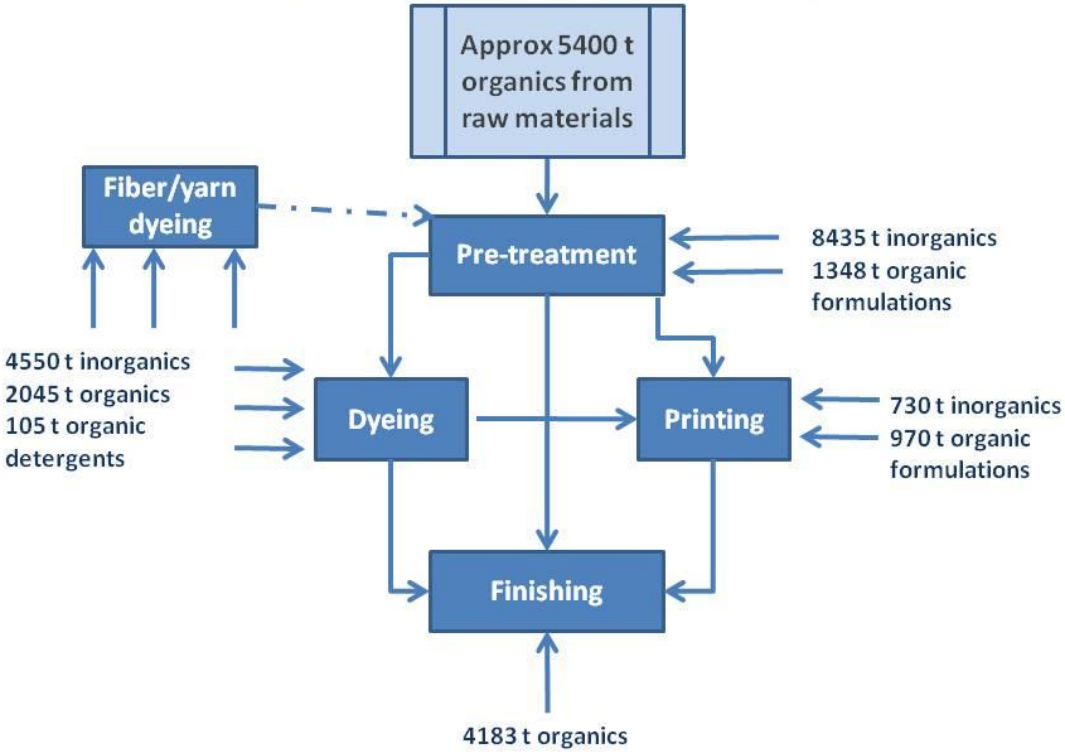
The Importance of Full Information

Concentration	Typical Composition of Flame Retardant Formulation	Actual Composition of Substances Listed in Flame Retardant Formulation
15 g/l	Polysiloxane formulation	20 %Polysiloxane with chain distribution 5 % Oligosiloxane, cyclic 1 % Acetic acid, technical 3 %Fatty alcohol, ethoxylate, by-products 3 %Glycerol, technical 2 %Fatty amine, ethoxylate, by-products
20 g/l	Stearylurea formulation	20 % Methylolated stearylurea, technical 3.7 % Ethanediol, technical 3.3 % Methanol, technical 0.5 % Diisobutoxymethane 0.5 % Isobutanol 0.2 % Formaldehyde
2 g/l	Phosphoric acid ester formulation	50 % Phosphoric acid butylester, technical
20 g/l	Melamine resin	50 % Trimethyl(methylol)melamine ether, technical 5 % Ethanediol, technical 1 % Toluenesulfonic acid 2 % Formaldehyde 3 % Inorganic salts

Consider Inputs

Figure 1.3: Basic Scheme of Inputs to Textile Finishing Industry (Austria)

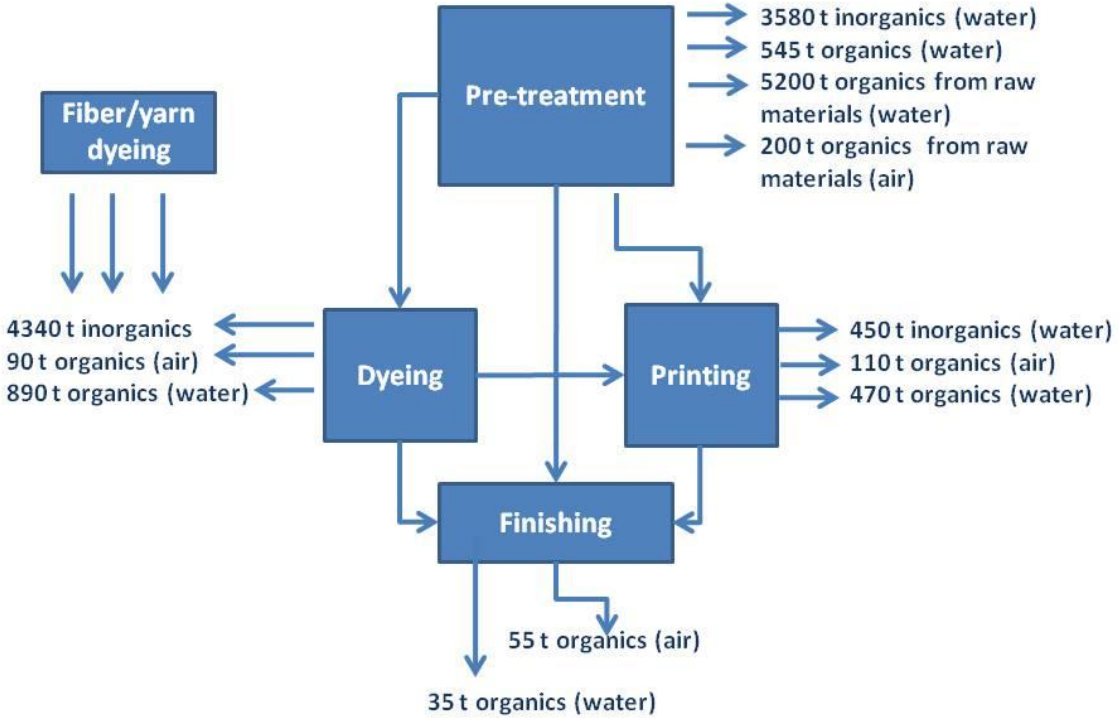
Total inputs: 28,000 tons/year (organics and inorganics)



Consider Outputs

Figure 1.4: Basic Scheme of Outputs from Textile Finishing Industry (Austria)

Total emissions to water and air: about 16,000 tons/year (organics and inorganics)



Inputs / Outputs

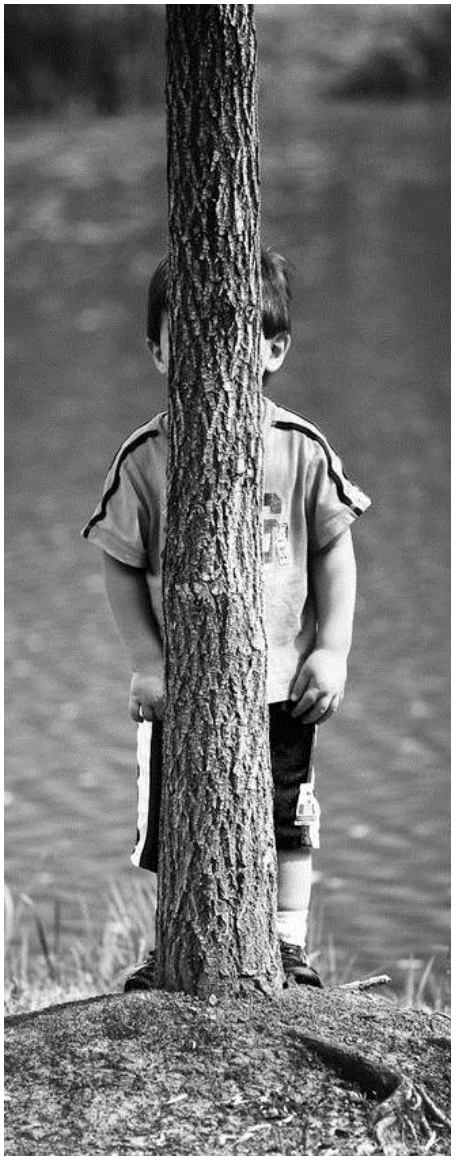
- Managing inputs
  - Manages RSL compliance
  - Manages effluent and air emissions to a large extent

Consider Harmful Chemicals

- **Hazard**
- Understand where harmful chemicals are present
- Look for lower impact alternatives
- **Risk**
- Learn how to minimise exposure

Consider Chemical Volumes

- Reduction of volumes used reduces exposure
- Achieved by:-
  - Removing unnecessary chemical use
  - Reducing water consumption
  - (Reducing energy consumption)



Where are Harmful Chemicals Hiding?

- Many Places
  - In fibres
  - In oils
  - In lubricants
  - In dye formulations
  - In chemical formulations
  - In adhesives
  - In coatings
- AND……

Consider Further Reactions

- It's not just what's in the formulation
- In chemistry....

A + B = A + B + C + D + Cousin of A etc!!

The Chemical Guidance Document

- Helps
  - Understand where you may find harmful chemicals
  - Learn how to minimise use harmful chemicals
  - Learn how some harmful chemicals are formed during processing

The Chemical Guidance Document

- The concept of zero harmful chemicals has zero credibility
- Makes it clear that complete avoidance of chemicals is impossible
- Chemicals are a necessary part of the modern world but they need to be **understood** and **managed**

Where can you find this information?

- AFIRM website

http://afirm-group.com/supplierrsltool.htm