

Portuguese Road Congress 2006



Beneath the Surface

Knut Søråas



eurobitume

European Bitumen Association



Presentation Outline

Advances in bituminous pavements:

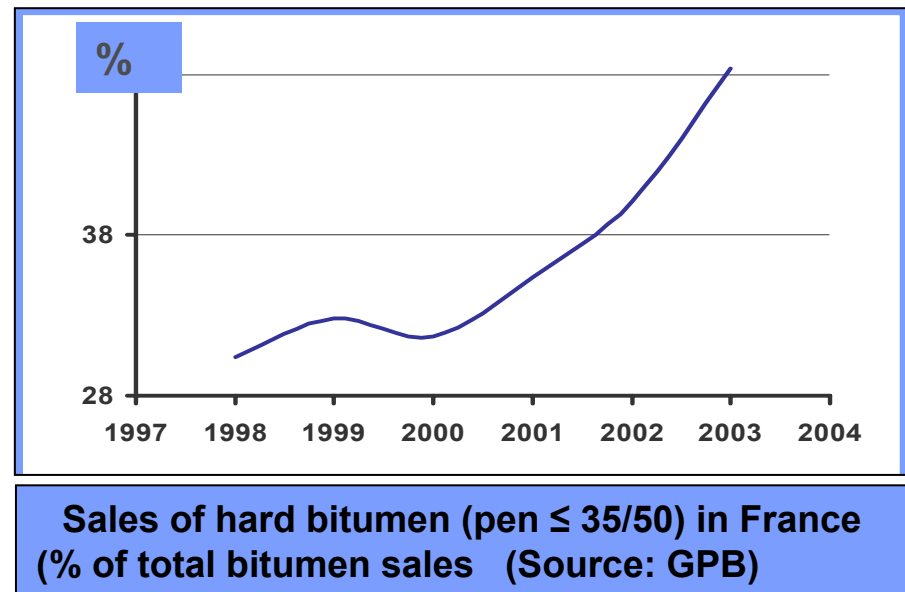
- **The Benefits of Asphalt**
- **Ensuring Health & Safety**

Building for the next ten years and well beyond..

Built to last

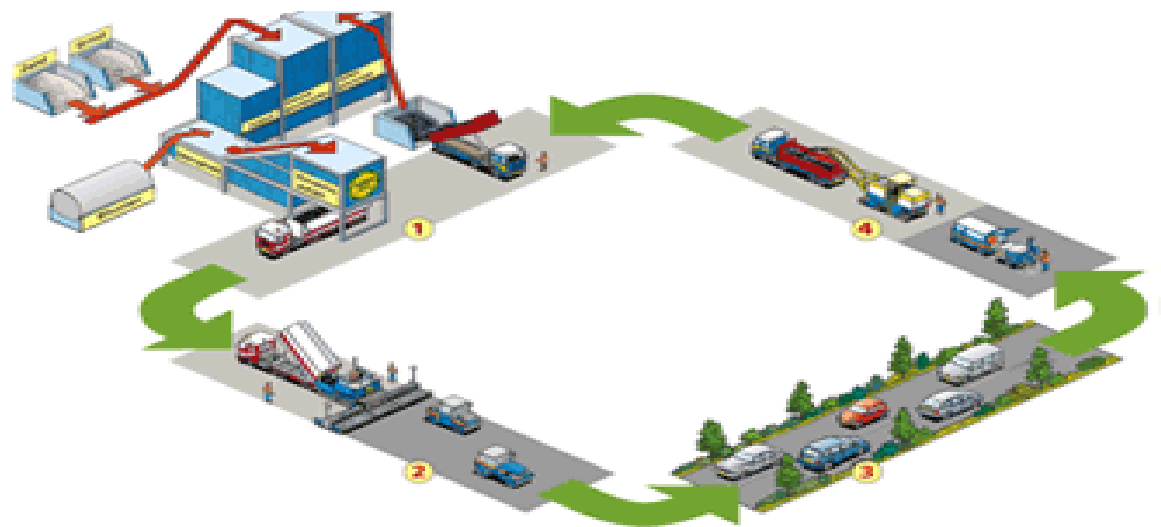
- Modern design: 40+ years life-span, with proper maintenance even longer

Solid base course
with protective,
replaceable
wearing course



Environmentally friendly

- **Asphalt is 100% recyclable**
- **Saves virgin material, saves transportation**





Cost effective

- Energy Efficient
 - Life Cycle Inventory (LCI) calculations show asphalt pavements are the most energy efficient solutions *
- Cost effective
 - Initial investment needed to meet initial traffic loads only, additional only as required later
 - Rapid and flexible maintenance options

- IVL report: Life Cycle Assessment of Road (H. Stripple 2001)
- Energy involved in construction materials and procedures (Woodrow J. TRB: Halstead 1981)
- AI: *Energy Requirements for Roadway Pavements* (1975)



Noise reduction

- Standard asphalt – less than half the noise of concrete
- Porous pavements – for even quieter roads

100 dB Jackhammer

> 82 dB Stones
81 dB Concrete

77 dB Standard asphalt

74 dB Porous asphalt

< 72 dB Silent asphalt

Note: 3 dB higher is twice as much noise



Investing in Research

- The forthcoming IARC* Monograph Review is the focus of the bitumen and asphalt industry today
- Producers and users are globally pooling resources to research, evaluate and communicate results based on sound science

*International Agency for Research On Cancer, a WHO Agency.



Industry Preparations

- Bitumen producers and users are preparing on a global basis:
 1. Industry description
 2. Research: IARC NCC and other studies
 3. Health Symposium
 4. Bibliography
- Eurobitume taking a leading role



Research Underway

Major European studies

Designed to address past weaknesses

- Inhalation Study (Fraunhofer)

focus on fumes /occupational exposure

- Nested Case Control (IARC)

clarifying prior results/confounding factors

- Human Exposure Study (BGFA)

linking animal data to humans/work place studies



Ensuring health & safety

- Bitumen – Safe product for intended use

But

- Some past practices require special care...

Coal Tar in Bituminous Mixtures

- **Similar in appearance - quite different in hazard**

Coal Tar

Produced from destructive distillation of coal



EU Category 1 Proven Human Carcinogen

Refined Bitumen

Produced from crude oil

Bitumen *

- Not classified at EU level
- Eurobitume recommends No Classification

* The 9 bitumen substance entries in EINECS



Regulatory issues, Implications

- Requirements for health monitoring of workers exposed to carcinogens
- Requirement to substitute with less hazardous materials where possible
- Reclaimed asphalt products may be contaminated with coal tar



Conclusion

- Asphalt means
 - Practical solutions, right here, right now
 - Perfect for any number of applications
 - Quality of life, noise reduction, minimum disruptions, flexible maintenance solutions, increased mobility
 - Responsible commitment to the future



Beneath the Surface

Bituminous Pavements

To Learn More

**Please accept our invitation to the
International Bitumen Health Symposium**

Dresden 7 & 8 June 2006

&

IV Eurasphalt & Eurobitume Congress

Copenhagen 21 – 23 May 2008