

# Portuguese Road Congress 2006



## Beneath the Surface

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# Presentation Outline

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## **Advances in bituminous pavements:**

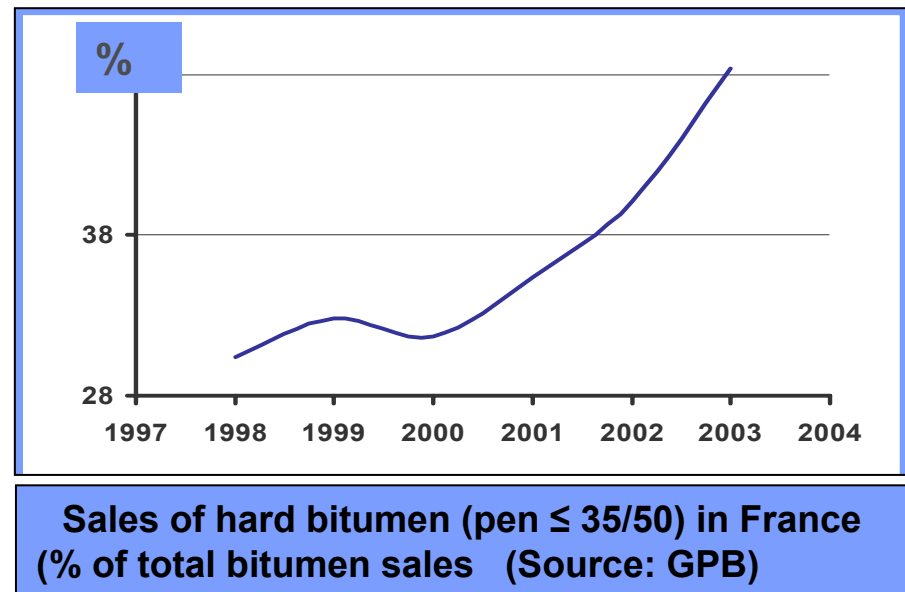
- **The Benefits of Asphalt**
- **Ensuring Health & Safety**

**Building for the next ten years and well beyond..**

## Built to last

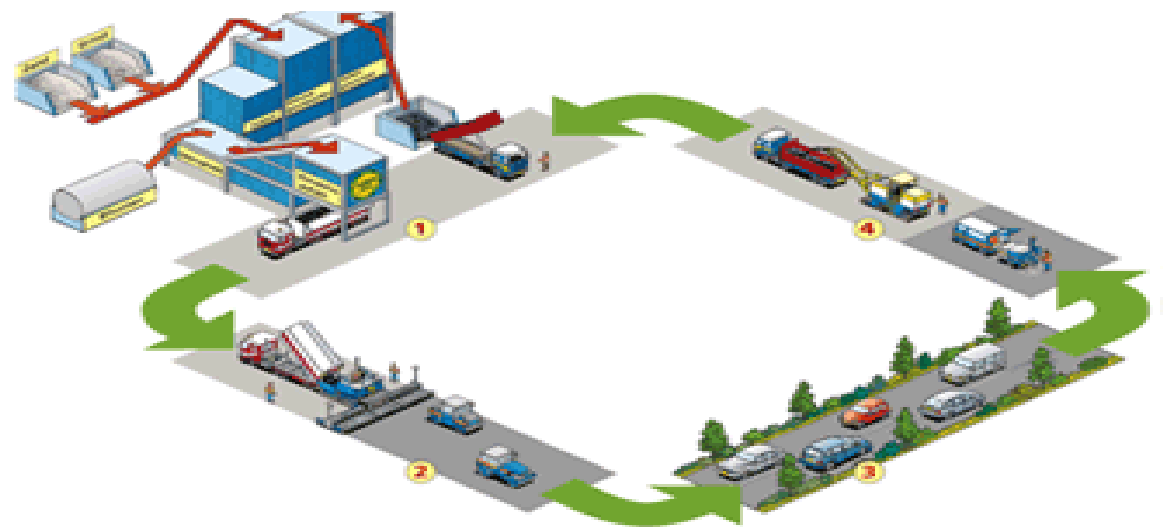
- Modern design: 40+ years life-span, with proper maintenance even longer

Solid base course  
with protective,  
replaceable  
wearing course



# Environmentally friendly

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





# Cost effective

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- 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

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- 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

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- 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

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## 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

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- 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

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- 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

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- 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

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## **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**