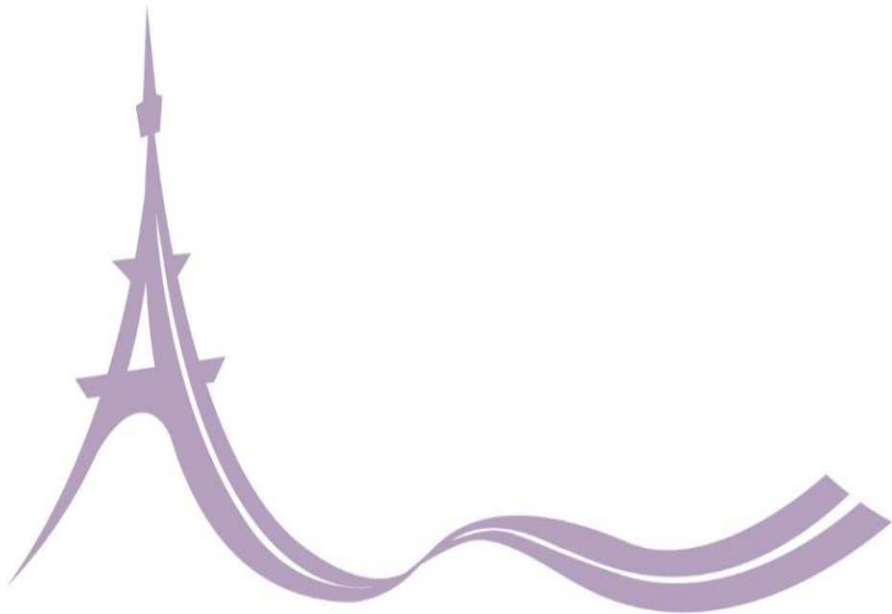


Health, Safety & Environmental stewardship in the bitumen industry



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PAVEMENT PRESERVATION & RECYCLING SUMMIT

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HEALTH



Hazard, Exposure & Risk

- › **Hazard**: An inherent property of a substance, object or activity with a potential for adverse, or harmful, effects to occur
- › **Exposure**: A quantitative measurement of the extent to which a given hazard is present
- › **Risk**: the probability that an adverse event will occur

Hazard, Exposure and Risk

$$\text{Risk} = \text{fn}[\text{Hazard} * \text{Exposure}]$$



No Exposure
No Risk, No Health Impact

Bitumen Hazards and Risk management

› REACH: EU Regulation 1907/2006

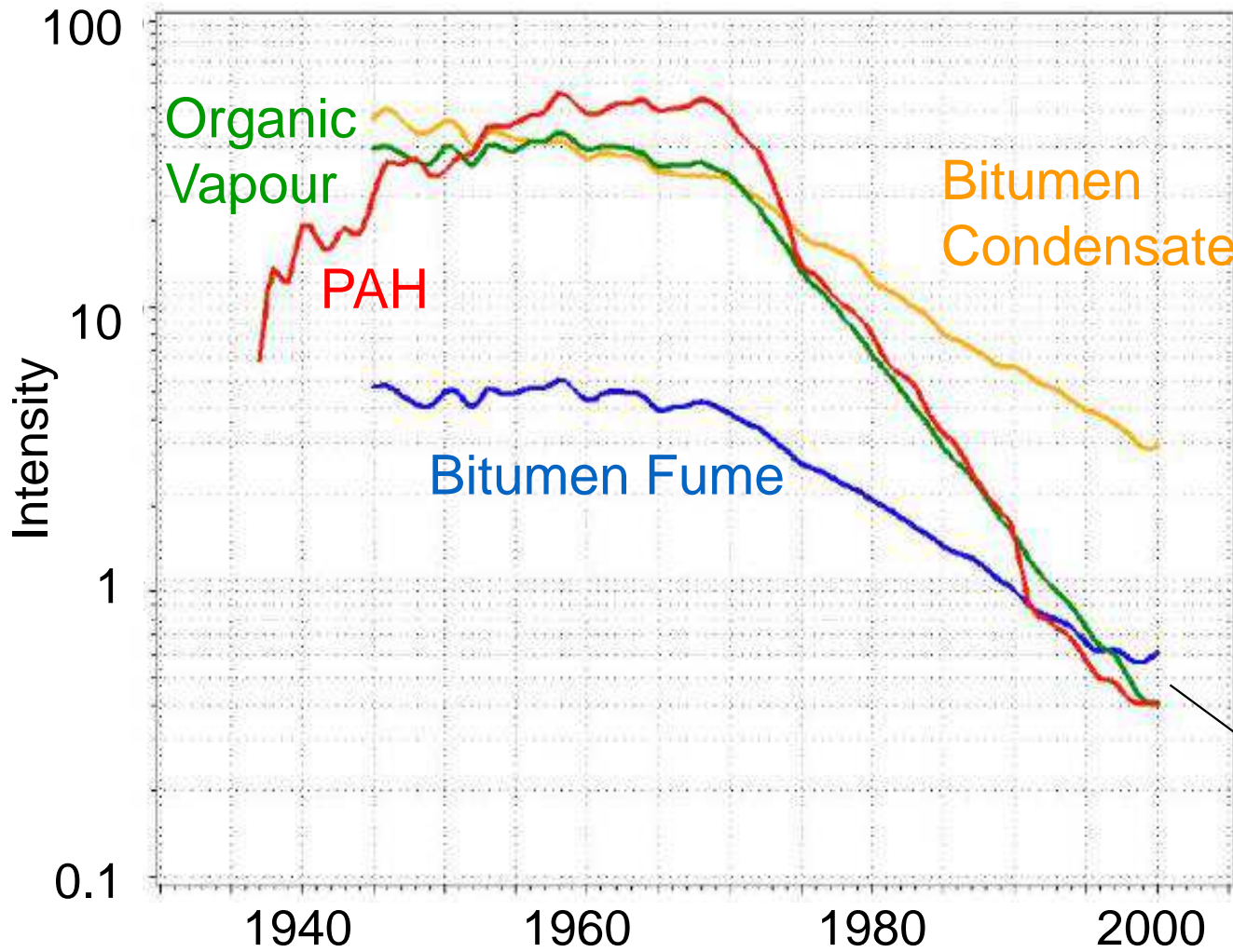
- Ensure a high level of protection of human health and the environment from the **risks** that can be posed by chemicals,
- Manufacturer is responsible for assessing and managing the **risks** posed by chemicals and providing appropriate safety information to downstream users.

› Bitumen is not classified as hazardous for Health and the Environment

› Risk Management Measures aimed at controlling **exposure**

Hazard	Exposure	Risk at high exposure Potential Health Impact	Risk Management Measures	Risk after Measures
Heat / high T	Dermal Contact	Skin damage ... death	PPE, Equipment, Procedures	Low
H ₂ S in fumes	Inhalation	Acute toxicity ... death	Procedures, Equipment	Very low
Cancer (due to PAH in fumes)	Inhalation, Dermal Contact	Chronic toxicity ... death	Lower emissions, temperature, fume extraction equipment, etc	Very low
Fumes (respiratory tract irritation)	Inhalation	Respiratory irritation Breathing problems	Lower emissions, temperature control, fume extraction, etc	Very low

Historic Exposure



Always room for improvement

Exposure Reduction

- › Warm mix technologies
 - More than a dozen
 - Application temperature reduction (from 10 to 100 °C)
- › Increased use in Europe since 2000
- › Technology along the whole supply chain
 - raw materials and additives
 - production equipment
 - laying technologies
 - working practices

SAFETY



Safety

- › Safe loading & delivery
- › Safe Handling of bitumen
- › Burns Card
- › Maximum Safe Handling Temperature
- › Information on transport legislation



BRÛLURES PROVOQUÉES PAR LE BITUME

NOTE D'INFORMATION DESTINÉE AUX PREMIERS SECOURS ET AU PERSONNEL MÉDICAL

Il convient que toute personne travaillant au contact de bitume chaud ait connaissance des présentes recommandations afin de prodiguer les premiers secours aux victimes de brûlures.

Lors du transport de la victime chez un médecin ou à l'hôpital, le présent document devrait accompagner la victime et être placé en évidence.



Updated Eurobitume Technical Guidance on Maximum Safe Handling Temperatures for Bitumen

For many years, bitumen manufacturers have specified maximum safe handling & storage temperatures for bitumen products, primarily to prevent the formation of flammable atmospheres in heated storage tanks. The maximum handling & storage temperatures vary according to bitumen grade, but the current recommended maximums for paving grade bitumen¹ and bitumen for industrial applications²

comment enlever dès que possible la croûte de bitume sans provoquer de lésions supplémentaires.

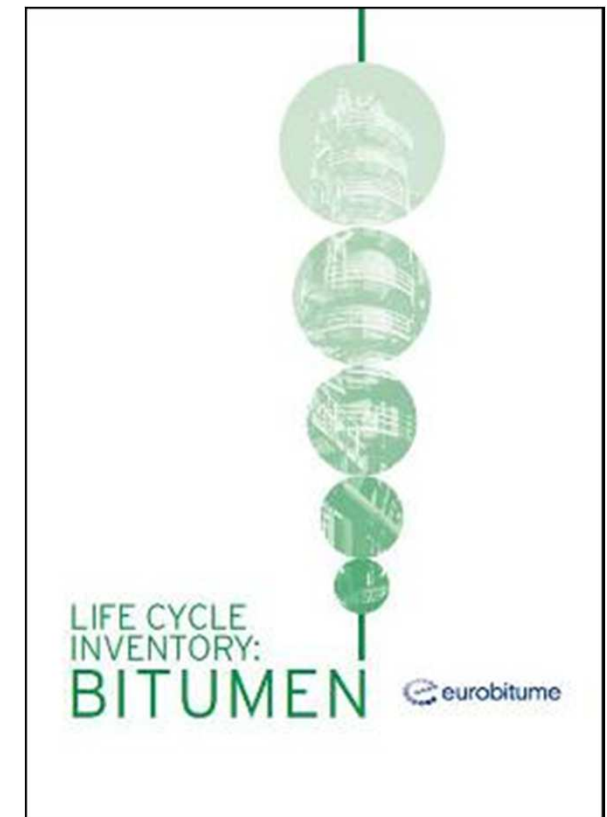


ENVIRONMENT



Environment

- › First bitumen LCI produced in 1999, Updated in 2011
 - 'Cradle' to refinery gate
 - Paving bitumen, bitumen emulsion and PMB
 - Can be used as input for EPDs
- › Emissions to water are low and far below any regulated limit
- › Bitumen is uniquely suitable for repair and maintenance of road pavements
 - Re-usable and recyclable indefinitely



A Global Perspective

› Joint publication with the Asphalt Institute

- Bitumen manufacturing
- Bituminous products
- Chemical & physical properties
- Emissions to air & water
- Occupational Exposure
- Health & safety
- Sustainability



Coming soon....
3rd edition

CONCLUSIONS

Health

- › Bitumen is not classified as hazardous to health or to the environment
- › Hazards of working with bitumen are now well defined
- › Risks are very low and can be reduced further through exposure reduction
- › Temperature control and reduction are key

Safety

- › Bitumen is usually handled and applied hot
- › Workers can be adequately protected by
 - following good practices and
 - using the right equipment (PPE)

Environment

- › Bitumen is a durable and environmentally benign construction product
- › 100% re-usable/recyclable
- › Quantified environmental footprint



Finally...

Bitumen is a sustainable product that
you can work with in confidence!



DESTINATION
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