



Lavtemperaturasfalt

**Hva skjer andre steder
What happens elsewhere
rapport fra / report from EAPA**

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WMA - where are we ?

- Short overview general WMA techniques
- Situation in Europe
 - driving forces and
 - attitudes regarding WMA
- Situation in USA
 - driving forces and
 - attitudes regarding WMA
- Conclusions



General techniques

used in Europe

- Organic additives
- Mineral additives
- Foaming techniques
- Chemical additives

But there are also:

- Emulsion based techniques
- Low-viscosity vegetable based binders



Situation in Europe

Examples

- Germany
- Norway
- Denmark
- France
- Spain
- Rest of Europe



Germany

- Here several techniques started
- Additives or ready-made bitumen is used
- It is allowed to use, but not required
- Only in special cases request for WMA
- Road authorities do not want to pay more
- No real booming business
- *When you use it, it is a learning curve*



Norway

- In 2011: Road sections with WMA: 1 km/section.
- Different WMA techniques used
- Study for:
 - Working conditions - bitumen fumes - health aspects
 - Workability
 - Asphalt quality
- Use of WMA is more driven by health issues
- Goal of study: **To get things moving**
- **And** 5% in 2012, 10% in 2013, 15% in 2014 etc.
and in 2021: 50%



Denmark

- Every company has WMA method
- No client is asking for it
- Road Authority is not convinced yet of durability
- CO₂ and working environment becoming bigger argument
- It will come in next 5 years



France

- Not a big development
- No real developments
- Each company has its own technique
- Generally costs WMA bit higher than HMA
- Clients are not asking for it
- Many talk about sustainability and CO₂ reduction but nothing is changing

- Vision Colas: in 2020: 50% Asphalt: WMA



Spain

- More than 1 million tonnes WMA in 2010
- Different techniques are being used
- Much foaming
- Also very special emulsions (80 – 90°C)



Rest of Europe

- UK
- Czech Republic
- Poland
- Turkey
- The Netherlands



Mean reasons for using WMA

- Construction time reduction / earlier opening
- Improvement of the workability
- Reduction of energy
- Environmental / Lower emissions
- For “promotional” reason / self-interest
- Lower compacting temperatures and extended transport time for AC from the plant
- Increasing the resistance to deformation
- Workers health



Reasons for not using WMA

- No demand for it
- Too expensive
- Not ready to produce it
- Incentives are still weak
- Not known by the asphalt contractors and the road authorities
- Not included in the specifications



Why no interest yet

- It is more expensive
- No reason to spend more money for it
- Lack of knowledge and experience
- Not convinced of quality / performance
- Not included in the national specifications



Europe in short

- Attitude
- Driving forces
- Improving working environment
- Using all the other advantages of WMA

Drive and vision needed

WMA use in the USA

- It came to the USA in 2004
- 2008: 1st WMA Conference in Nashville, USA



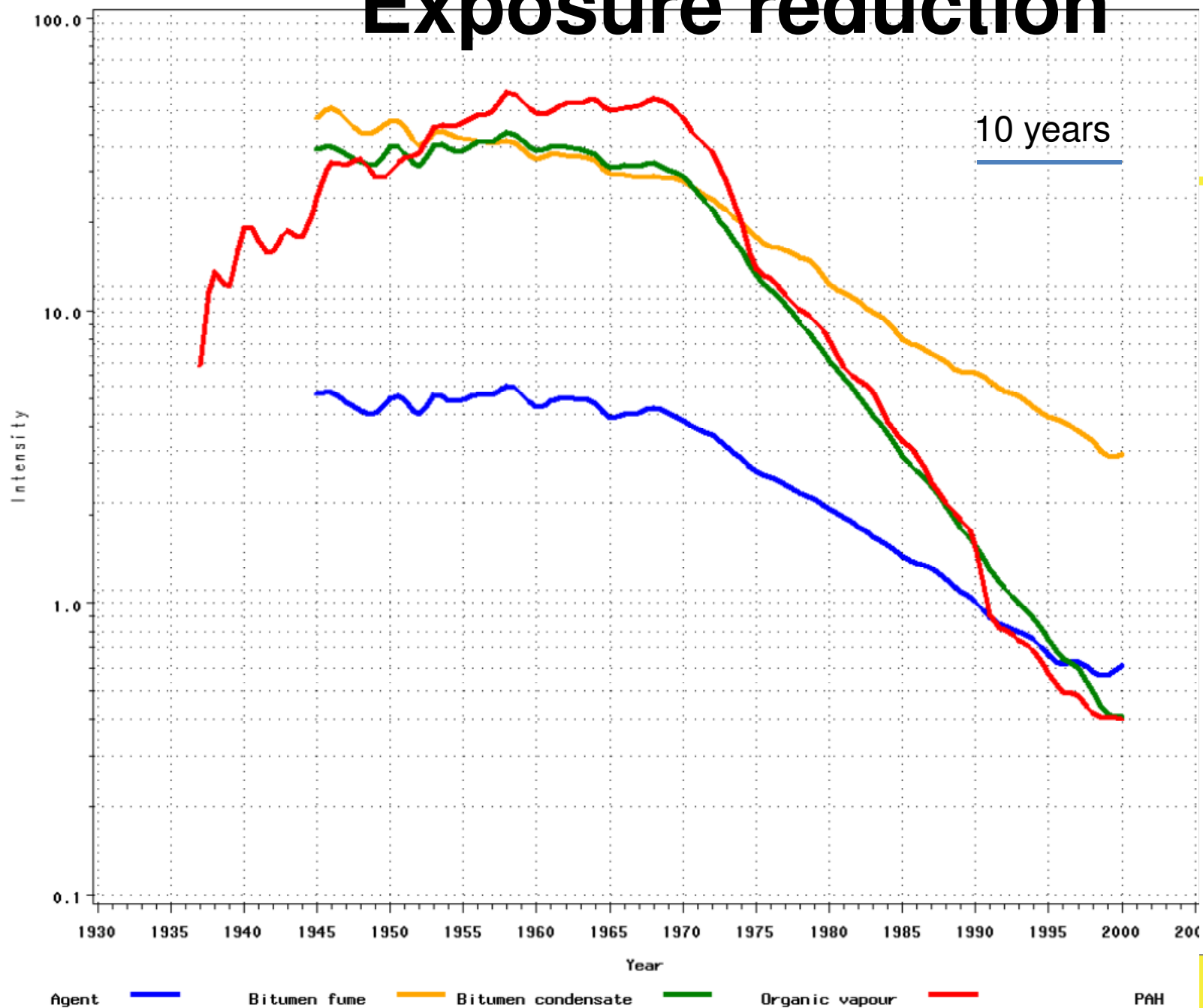


IARC NCC Study 2009

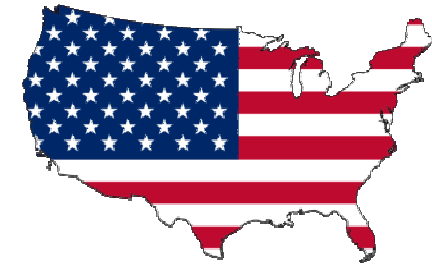
Conclusions NCC study

- No consistent evidence exposure to bitumen and lung cancer risk
- The findings of our study underline the importance of the current trend in reducing inhalation and dermal exposure to bitumen in the workplace

Exposure reduction



Trends
in
exposure
1930 –
2000



- 2nd International Warm Mix Conference, October 11-13, 2011, St. Louis, Missouri





2ND WMA Conference

- 550 persons of 24 countries





WMA in USA

WMA started in 2004 with 0,1 million tons.

- in 2005 a few technologies
- in 2009: 19,2 million tons in 2009 (5,4%)
- In 2010: 47,6 million tons (13,2 %)

- Now: In USA about 20 techniques for WMA
- and 90 % foaming.

One of the reasons to start was Fume Reduction



Why is it booming - 1

- FHWA - the Federal Highway Administration helped a lot
- FHWA is an agency within the U.S. Department of Transportation that supports State and local governments)
- FHWA works in partnership and supports investigations, research and training



Why is it booming - 2

- They have a national initiative to avoid that each state will have to do the research again.
- In USA many research studies like NCHRP
- They are still doing more research. Studies are planned for 2012 and 2013.
- They have a vision and a goal
- In the future no difference between HMA and WMA



Other arguments

- WMA: Equal or better performance
- States support use of WMA
- Longer haul distances: wider area to get jobs
- They use it to allow more RAP (otherwise they had to heat aggregate too much)
- RAP + RAS: 40% effective binder replacement

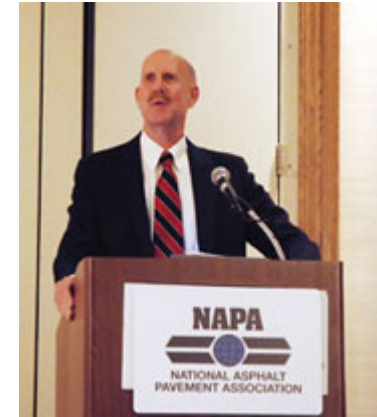
- Now 28 states have specs for WMA
- In December 2011 : 41 states will spec for WMA



NAPA vision

WMA has:

- Environmental benefits
 - Health benefits
 - Engineering benefits
 - Environmental benefits
-
- Never seen a shift like this before
 - Difference between HMA and WMA will disappear



Kim Snijders
Chairman NAPA



Contractors

- Steve Jackson, NB West Contracting Company
- 95% of the material is WMA
- In USA in some states 5% bonus can be achieved for good compaction
- Thanks to this bonus: WMA is more profitable.
- He thinks green (= dollars)
- WMA additives used to increase RAP. That saves money
- The contractors use it now for Cost Reduction





Production Figures USA

Total Estimated Tonnages

	2009	2010
HMA/WMA Tons	358 MT	360 MT
RAP used in HMA/WMA	56 MT	62 MT
Total RAP Recycled	64 MT	72 MT
Total RAS to HMA/WMA	0.70 MT	1.10 MT
Total WMA Tons	19.2 MT	47.6 MT

5,4 % 13,2 %

Europe

± 1,5 % 2,5 %



Conclusions USA - 1

- Why is it booming in the USA
- FHWA is promoting and supporting WMA
- The national initiatives avoids each state to reinvent the wheel
- They have national funded research
- All experts are in the Warm Mix Asphalt Technical Working Group (WMA TWG):
- They have influential persons promoting WMA.
- State DOTs allow WMA and have specs



Conclusions USA - 2

- They have a vision
- The contractors have an incentive to produce WMA (cost reduction)
 - Better compaction
 - More RAP and RAS



How to stimulate WMA

- Increase knowledge on both sides
- Promote (technical and environmental) advantages of warm mixes
- Convince politicians and road authorities
- Provide proof of performance and durability
- Take ecological effects during tendering into account



Conclusions

In Europe

- We need to join forces to move forward
- We need Partnership to get it forward

- Influential persons needed to promote WMA



Final conclusion

WMA is the future

5th Eurasphalt & Eurobitume Congress

13 - 15 June 2012
Istanbul, Turkey

DESTINATION
EURASPALT & EUROBITUME



ISTANBUL
5TH E&E CONGRESS - 2012

FAV Seminar 17. November 2011 - Lavtemperatursfalt - Norway