



VARIREI07: SIIV-ISAP  
Workshop Recyclun/Re-Use  
Asphalt, 28June, L'Aquila



University of L'Aquila - School of Engineering, June 28, 2007

*International Workshop*

# Asphalt Recycling and Materials Re-use in Asphalt Pavements

## Identification of open questions and research needs

**Chairs:** Antonio Montepara  
(Representing SIIV  
President)

University of Parma

Manfred N. Partl  
(ISAP President)

EMPA, Swiss Federal Laboratories;  
Road Engrng/Sealing Components

**Secretary:** Gabriele Tebaldi  
(Secretary ISAP WG05: Reuse of Constr. Materials)

University of Parma



# Main Subjects

## Recycling:

Re-Use of **pavement materials** in pavements

### Goal:

- **No down-cycling**, i.e. use of 100% in same function with same or improved properties and performance as new materials
- Repeated recycling possible



## Re-Use of Materials:

Re-Use of materials from **non-pavement origin** in pavements

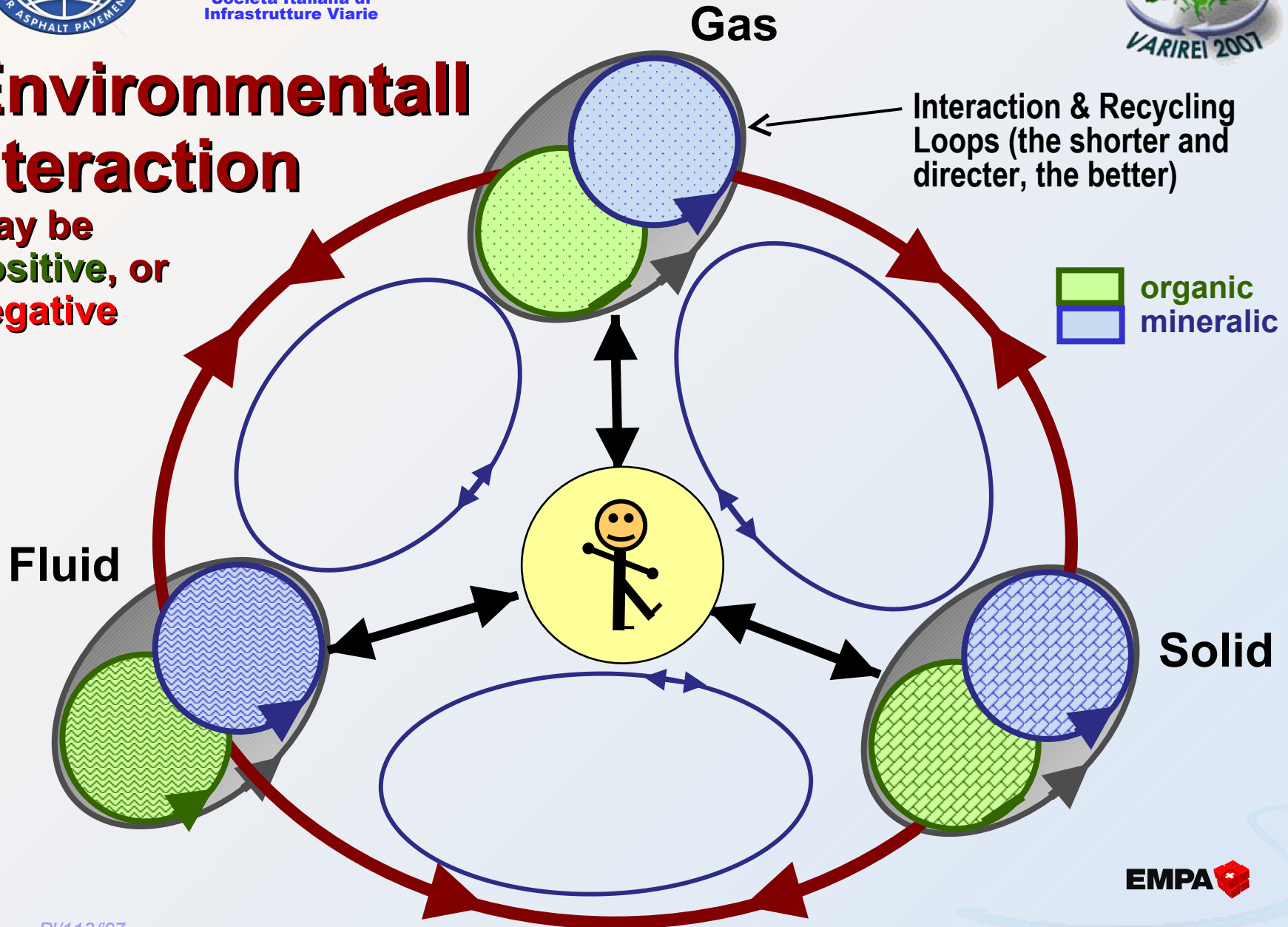
### Goal:

- **No linear landfill**, i.e. use of 100% to obtain equal or improved properties and performance as with new material
- Repeated recycling possible



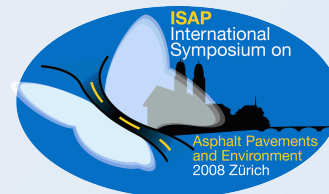
# Environmental Interaction

may be positive, or negative



# Subject

- **Identification of Open Questions & Research Needs**
  - Interest of Society: Environmental and Sustainability issues
    - Benefits and Drawbacks
  - Interest of User and Owner: Performance
    - Mechanical Properties
    - Durability
    - Chemical & Structural Stability
  - Interest of Designer and Contractor:
    - Construction Issues
    - Material Design,
    - Cold or Hot Techniques
- Pre-event to **ISAP 2008 Zürich**
- One further step to create **ISAP TC** on Re-use and Sustainability of Asphalt Pavements





# ISAP2008 Symposium

## Topics

- Emissions and working **safety**
- **Noise** reducing pavements
- Drainage and **water** susceptibility
- **Low energy** asphalt mix production & placing
- Environmentally sustainable **new materials**
- **Repeated** recycling and material resources
- **Durability** and aging
- Innovative **design**
- Roads for **energy production**
- Roads for envir. friendly **winter maintenance**



**Aug. 18<sup>th</sup> ...20<sup>th</sup>, 2008**

**[www.empa.ch/ISAP2008](http://www.empa.ch/ISAP2008)**

**Advisory Committee** *M.N. Partl*, Chairman, EMPA, Swiss Federal Laboratories for Materials Testing and Research, Dübendorf, Switzerland; *G. Huber*, Heritage Research Group, USA; *E. Skok*, White Bear Lake, MN, USA; *G. Doré*, Univ.Laval, Québec, Canada; *G.J.A. Kennepohl* University of Waterloo, Canada; *D.E. Newcomb*, NAPA, Lanham, MD, USA

**Scientific Committee** *G. Airey*, UK; *H. Al Khalid*, UK; *M. Anderson*, USA; *S. Angelone*, Argentine; *H. Bahia*, USA; *W. Bańkowsky*, Poland; *L. Bernucci*, Brazil; *E. Beuving*, Belgium; *M. Butcher*, Australia; *B. Buttler*, USA; *F. Canestrari*, Italy; *A. Carter*, Canada; *A. Collop*, UK; *G.R. Chehab*, USA; *J.S. Daniel*, USA; *C. De la Roche*, France; *H. Di Benedetto*, France; *J. Emery*, Canada; *Z. Guo*, China; *John T. Harvey*, USA; *R.G. Hicks*, USA; *K. Himeno*, Japan; *M. Hugener*, Switzerland; *U. Isacsson*, Sweden; *I. Ishai*, Israel; *K. Jenkins*, South Africa; *A. Jullien*, France; *R. Karlsson*, Sweden; *N. Kringos*, The Netherlands; *R.B. Leahy*, USA; *L. Leite*, Brazil; *A. Loizos*, Greece; *M. Luminari*, Italy; *S. Maccarrone*, Singapore; *D. Mangan*, Australia; *M. Marasteanu*, USA; *F. Martinez*, Argentine; *A. Montepara*, Italy; *M. Pasetto*, Italy; *C. Pashula*, Australia; *B. Pidwerbesky*, New Zealand; *J.-P. Planche*, France; *L. Porot*, France; *I. Rickards*, Australia; *R. Roque*, USA; *E. Santagata*, Italy; *A. Scarpas*, The Netherlands; *C. Schwartz*, USA; *H. Soenen*, Belgium; *J.B. Sousa*, Portugal; *B. Steven*, USA; *L. Sun*, China; *D. Sybilski*, Poland; *G. Tebaldi*, Italy; *S. Toth*, Hungary; *A. Vanelstraete*, Belgium; *L. Walubita*, USA; *J. Yu*, China



# Program/Concept

Time	Event	Task	Notes	Where?
08:30	Welcome, Organization	Planning, House- Keeping		Main Room
09:00	Presentations 1..6 (15' each)	Introduction & back-ground to subjects & questions	Co-Chairs Montepara/Partl	
10:30	Coffee Break			
11:00	Mini-Presentation 1...15 (4' each)	Prepared input to the questions of Workshop	Co-Chairs Montepara/Partl	
12:30	Lunch Break			
14:00	Parallel Sessions WG 1 (Montepara, Santagata) + WG 2 (Partl)	Identify open questions & research needs	Secretaries & Projector/Laptop	2 Class Rooms
15:30	Coffee Break	Prepare synthesis by Secr & Chairs of WG's		
16:15	Presentation Synthesis of Group 1 and 2 (20' each) & Discussion (20' each)		Co-Chairs Montepara, Santagata/ Partl	Main Room
17:35	Adjourn & Final Comments			
17:45	End of Workshop			

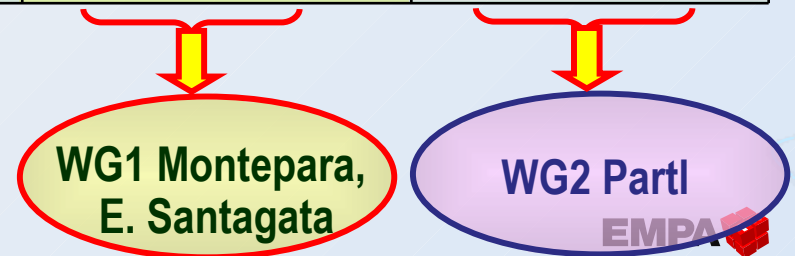


# Mini-Presentations/Statements

- *Doug Carlson*
- *Italo Carfagnini*
- *Francesco Canestrari*
- *Elena Romeo*
- *Angelo Canziani*
- *Fabio Capanelli*
- *Carlo Cristini*
- *Sandro Colagrande*
- *Antonio D'Andrea*
- *Marco Garofalo*
- *Antonio Montepara*
- *Hussain Bahia (Gabriele Tebaldi)*
- *Ettore Musacchi*
- *Marco Pasetto*

# Organization of Topics

Interest of	Subjects	Re-use of Materials in Asphalt Pavem.	Recycling of Asphalt Pavem.
Society	<b>Environmental &amp; Sustainability Issues</b>	<b>Presentation 1</b> Gordon Airey	<b>Presentation 2</b> Martin Hugener
	<ul style="list-style-type: none"> <li>• benefits</li> <li>• drawbacks</li> </ul>		
User & Owner	<b>Performance</b>	<b>Presentation 3</b> Dariusz Sybilski	<b>Presentation 4</b> Virginie Mouillet
	<ul style="list-style-type: none"> <li>• Mechanical Properties</li> <li>• Durability</li> <li>• Chemical and Structural Stability</li> </ul>		
Designer & Contractor	<b>Construction Issues</b>	<b>Presentation 5</b> Ezio Santagata	<b>Presentation 6</b> Hussein Al-Khalid
	<b>Material Design</b>		
	<b>Cold or Hot Techniques</b>		





# Presentation Proposed Issues

- General **overview** on the topic (warm-cold) material options
- **Interest/problems** for/of society (a), user and road owner (b), designer and contractor (c)
- Some specific solutions or problems as **examples**
- Where are the main **key players** in research, i.e. whom to contact? Who would be interested in **joint efforts**?
- Wrap-up, making a list of specific and **open questions and research needs** that should be discussed and clarified during this workshop

# Questions for WG's (1)

## Identification of open questions and research needs

- 1) What should be the major future **R&D directions** (what is promising, what is not?) what should be the priorities?
- 2) How to deal with **quality, durability, functionality** (where special and where not)?
- 3) How promote re-use & recycling in terms of **social & political acceptance**?
- 4) What could/should be the role of **international forums & organizations** and how could we proceed to achieve to that role?

# Questions for WG's (2)

## Identification of open questions and research needs

- 5) What is the role of **academia-practice**, i.e. university, research institutes, companies,... in terms of implementation of research;
  - what are the responsibilities of each partner and
  - how can you make sure that all work together as team and
  - that nothing gets ignored?
- 6) How and in what cases seek **alliances** with whom?
- 7) How get **funding** (government and private), i.e. who should take the risks & benefits...patents?

# Let's go!

