

Swiss TPH



Swiss Tropical and Public Health Institute
Schweizerisches Tropen- und Public Health-Institut
Institut Tropical et de Santé Publique Suisse

Department of Epidemiology & Public Health



FOCUS EVENT

Setting the Stage

How to regulate solid ambient nanoparticles in the air?

Prof. Nino Künzli, MD, PhD

Deputy-Director Swiss Tropical and Public Health Institute Basel

Head Departement of Epidemiology and Public Health

President of the Swiss Federal Commission for Air Hygiene (FCAH)

(Eidgenössische Kommission für Lufthygiene – EKL)

17th ETH Conference on Combustion Generated Nanoparticles

Wed June 26th 2013 – ETH Zurich

Swiss TPH is an associated Institute of University of Basel

Review of evidence on health aspects of air pollution (REVIHAAP)

http://www.euro.who.int/data/assets/pdf_file/0020/182432/e96762-final.pdf

Scientific Advisory Committee

Hugh Ross Anderson, United Kingdom

Bert Brunekreef, The Netherlands

Aaron Cohen, United States

Klea Katsouyanni, Greece

Daniel Krewski, Canada

Wolfgang G. Kreyling, Germany

Nino Künzli, Switzerland

Xavier Querol, Spain



World Health
Organization

REGIONAL OFFICE FOR **Europe**

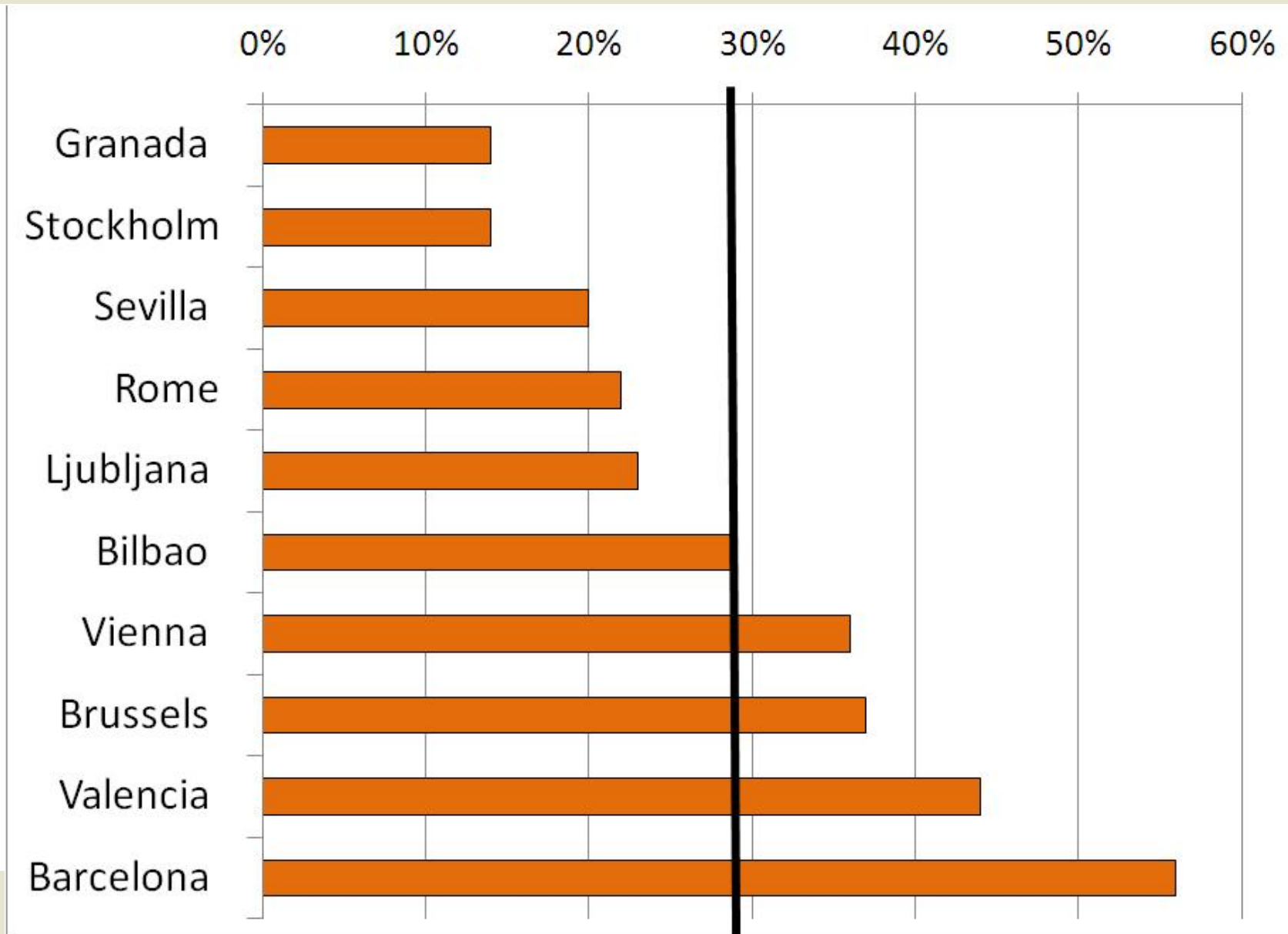
«Black carbon particles are a valuable additional air quality metric to evaluate the health risk of primary combustion particles from traffic including organics not fully taken into account by PM2.5»

...17th ETH Conference on Nanoparticles...

- Kent Pinkerton: toxicity depends on... sources, season,...
- Emily Bruns: ... dependance on temperature...
- Stephen Platt: ...no «one size fits al SOA formation...»... atmospheric conditions important...
- Suzanne Paulsen: ... UFP exposure depends on time of sunset... relevance of distance to road depends on wind direction, time of day,.....
- Harish Phuleria: ... correlation of PN varies across regions and season... (SAPALDIA)

Proportion of citizens living within 75 meters from busy roads ($\geq 10,000$ vehicles per day)

APHEKOM Project (Perez et al, 2013 – Eur Respir J)



clean air legislation (LRV)

- PM10 (annual mean; exceedances of 24hr)
- NO2 (annual mean; exceedances of 24hr)
- SO2 (annual mean; exceedances of 24hr mean)
- CO (exceedance of 24hr mean) ; Ozone;
- Pb and Cd in PM10 (annual mean);
- PM deposition (annual mean) total
- Pb, Cd, Zn, Tl in deposited PM

- «minimizing rule» for EC

Do we need to regulate other markers of urban air quality ... such as nanoparticles?

Swiss Federal Commission for Air Hygiene (FCAH) (Eidgenössische Kommission für Lufthygiene - EKL)

Künzli Nino, Prof. Dr. med. et PhD (President)

Ammann Christof, Dr. sc. nat.

Baltensperger Urs, Prof. Dr. phil. II

Braun Sabine, Dr. phil. II

Colombo Luca, Dr. phil. II ETHZ

Dubas Françoise, Ph.D.

Flückiger Alexandre, Prof. Dr. iur.

Gehr Peter, Prof. em. Dr. phil. nat.

Gehrig Robert, Dr. sc. techn. ETH

Gygax Hans, Dr. sc. nat.

Künzler Peter, PD Dr. phil. et phil. hist.

Leikauf Bernhard, Dr. rer. nat.

Nejedly Gerrit, Dr. phil. nat.

Probst-Hensch Nicole, Prof. Dr. phil. II et PhD

Secretary: Dr. Brigitte Gälli

(Swiss Federal Office for the Environment)

ARGUMENTS FOR NEW AIR QUALITY STANDARD

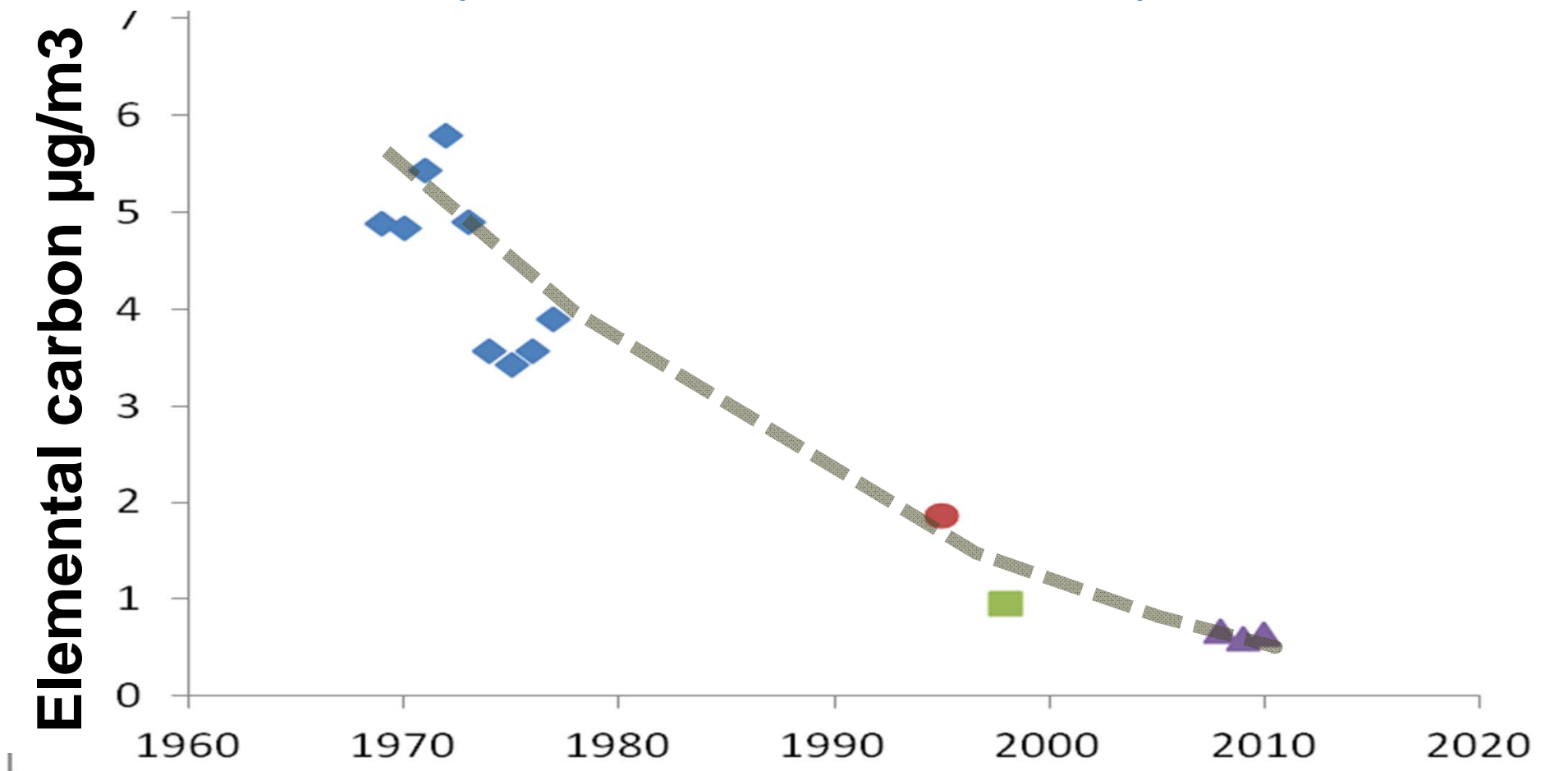
- **Spatial and temporal patterns are not the same as those from the already regulated pollutants**
- **Effects involve partly different mechanisms, thus, may be different and independent from those associated with regulated pollutants**
- **Precautionary principle...**

UNRESOLVED QUESTIONS

- **What marker and metric?**
- **How to monitor?**
- **How to evaluate compliance?**
- **Is EMISSION control sufficient to reach ambient goals?**
- **... research needed...**

Trends in «soot» concentrations Payerne (Switzerland) - 1970 to 2012

based on various measurement techniques, scaled to current standards
(data from Swiss Federal Authorities)



Environment and Health – Bridging South, North, East and West.

Conference of ISEE, ISES and ISIAQ in Basel, Switzerland 19–23 August 2013



www.EHBasel13.org

Some gaps will be discussed in Basel soon...

www.EHBasel13.org

August 19th 5:30pm to 23rd 4pm

- 2'100 abstracts (4 plenaries, 40 symposia, 80 sessions, 3 poster day)**
- ~ 40% about AIR POLLUTION... (measurements, modelling, health effects, public health impact assessment)**
- ~1'500 participants**
- Searchable program goes online early July**

Thank You !
Nino.Kuenzli@unibas.ch

NO REGRET STEPS FORWARD

- **Strengthen international standardization in monitoring**
- **Monitor key markers of near-road pollution - also in the absence of binding standards (EC, PN, OC, PAH, BaP etc.)**
- **Strengthen and enforce emission control for ultrafines (including off-road, ships, trains, mobile power stations, wood stoves etc.)**
- **Enforce reduction strategies for Diesel – a carcinogen - to reduce cancer risk, including at traffic hot spots**
- **Strengthen regulations for wood stoves**
- **Research to close gaps**

Considerations in air quality standard setting

- Laws to protect public health
- Scientific evidence for adverse effects
- Appropriate marker for health relevant air quality
- Technology to measure regulated marker of air quality
- Sensitivity of regulated marker to policy-related changes in air quality
- Regulatory tools to improve air quality

Long list of candidates...

- Ultrafine particle mass concentration
- Ultrafine particle number
- Particle surface area
- Oxidative potential of PM
- Soot / elemental carbon / black carbon / diesel particles...
- Metals
- CO
- NO

Scientific questions, hypotheses, and research funding streams are not necessarily tailored to answer policy questions.

However, as evidence for health effects of environmental stressors accumulate, the call for policies to prevent adverse health consequences emerge.

This event will address the challenges to link current knowledge with policies to protect public health