

3 dingen die u moet weten voor u nog eens een houtkachel aansteekt

Jordy Vercauteren

Mortsel, 13 november 2014

Inhoud:

1. Is hout verbranden schadelijk ?
2. Wat is de link met fijn stof ?
3. Is hout verbranden duurzaam ?

Is hout verbranden
schadelijk ?



Ten principles for clean air



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The European “Year of the Air” 2013 will be upon us soon: over the next several months, the European Union (EU) will revise its main air pollution control policies. Lack of clean air is one of the most important environmental threats to public health in Europe today. The European Respiratory Society Environment and Health Committee (www.ersnet.org) has developed 10 concise principles for clean air, which summarise the scientific state of the art and provide guidance for public health policy. This editorial was written in order to explain these 10 principles.

1) Citizens are entitled to clean air, just like clean water and safe food.

This principle, really, should be self-evident to the extent that one should be embarrassed to even mention it. But the reality is that millions of Europeans live in areas where it is unsafe to breathe the air around them.

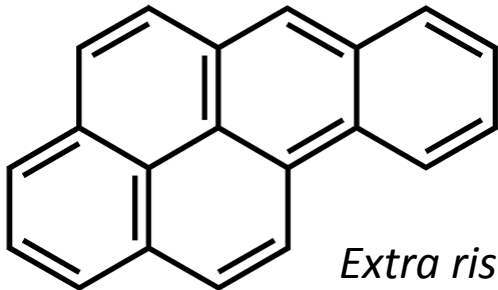
8) Combustion of biomass fuel produces toxic pollutants. This is true for controlled fires, such as in fireplaces, woodstoves and agricultural burning, as well as for uncontrolled wildfires. There is a need to assess the real health impacts of air pollution from these sources in many areas in Europe to inform on the need for better control.

The wildfire events in the summer of 2010 in Russia have dramatically illustrated how smoke from biomass combustion can lead to long periods of extremely high particulate matter air pollution concentrations [25]. The effects on mortality and morbidity are likely to have been severe but await further study. Wood smoke exposures can be high in EU areas where wood is a major source of home heating and cooking (parts of Scandinavia, the Alpine region and elsewhere) [26]. Combustion products from biomass fires are likely to be as toxic as combustion products from fossil fuels [27, 28], yet there is far less systematic study or control of the health effects of such pollutants. The use of biomass burning is currently being strongly promoted in Europe to reduce greenhouse gas emissions. It is important that, as much as possible, this burning should be done in larger installations with efficient and clean burning to reduce particulate air pollution emissions.

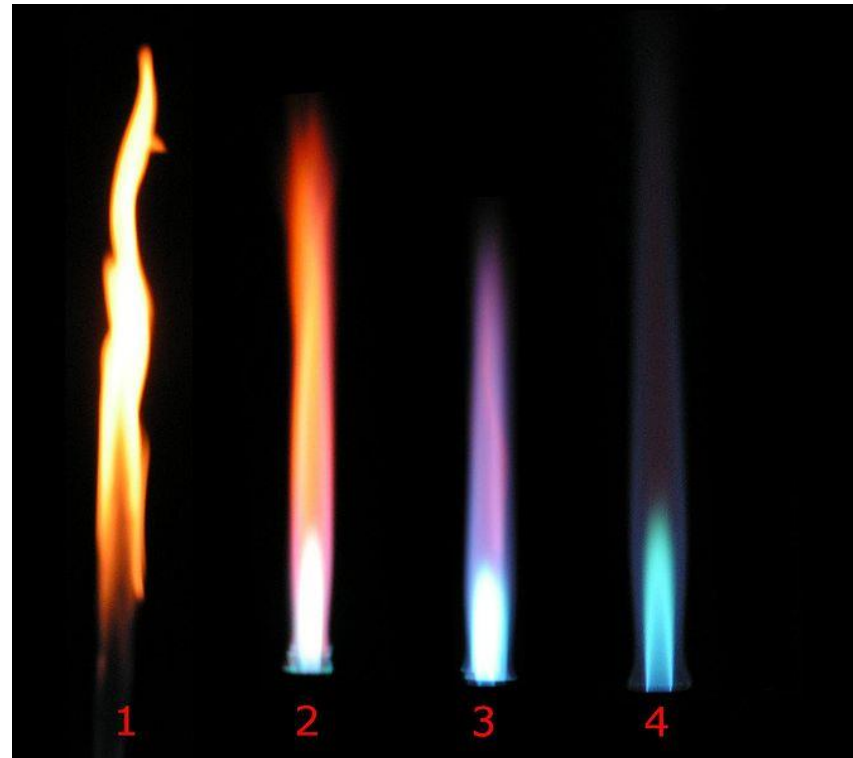
Onvolledige verbranding

Onvolledige verbranding
=
Kankerverwekkende
stoffen

*(Polycyclische Aromatische
Koolwaterstoffen - PAKs)*



Extra risico kanker: 1/10.000 bij 1,2 ng/m³

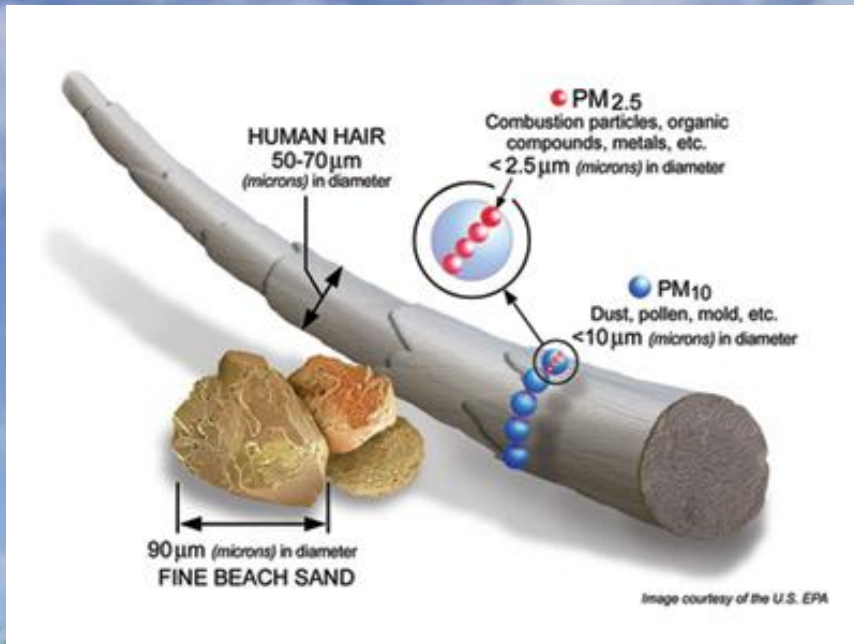


Onvolledige verbranding



Houtverbranding en fijn stof ?

Wat is fijn stof (PM10) ?



Uit wat bestaat PM10 ?

1. Ammoniumzouten (=NO₃+SO₄+NH₄)
>> 41% (12.6 µg/m³)

2. Organische massa
>> 20% (6.1 µg/m³)

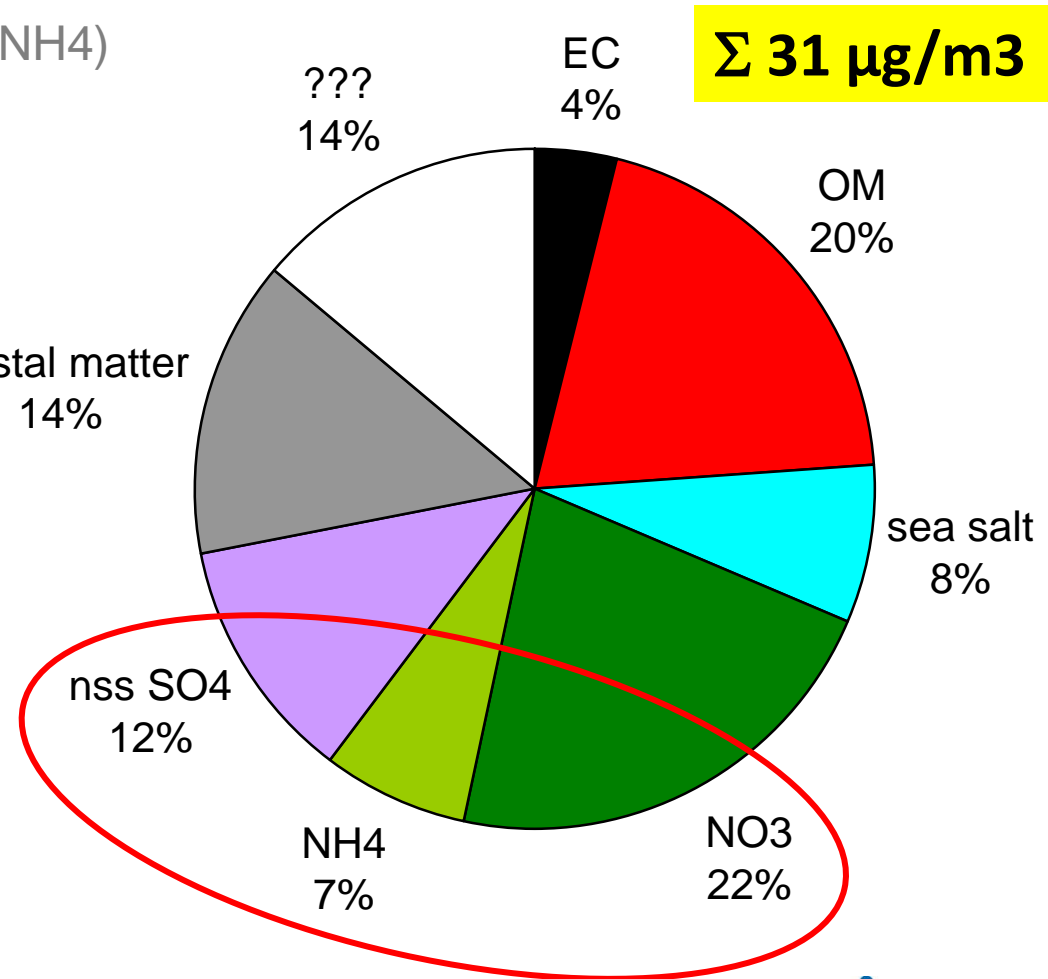


3. Mineraal stof
>> 14% (4.3 µg/m³)

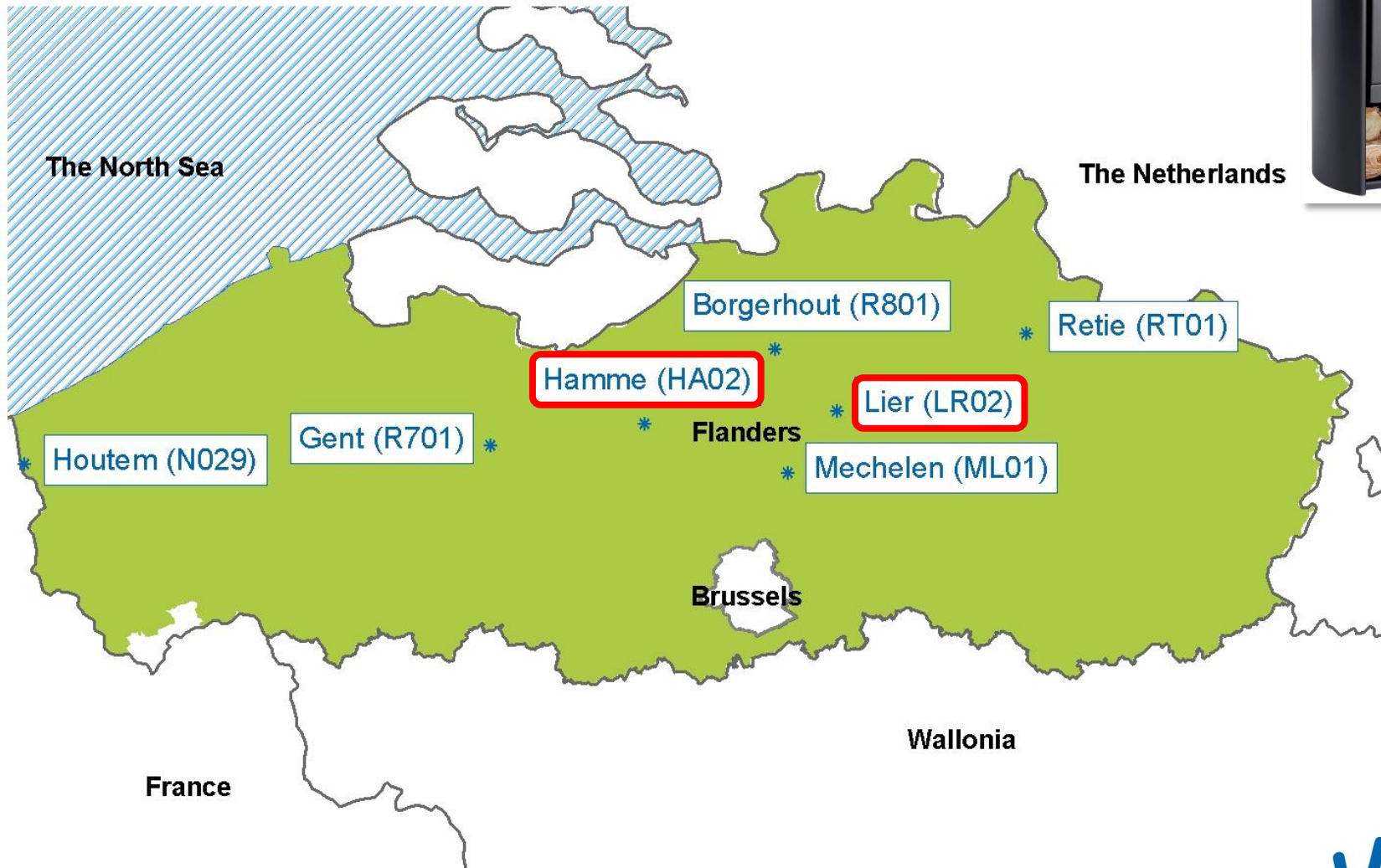


4. Zeezout
>> 8% (2.4 µg/m³)

5. Elementair koolstof (dieselroet)
>> 4% (1.2 µg/m³)



Chemkar II studie (2010):



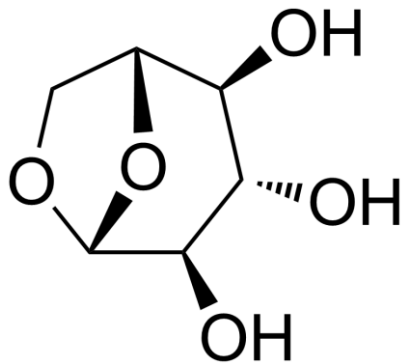
* monitoring site



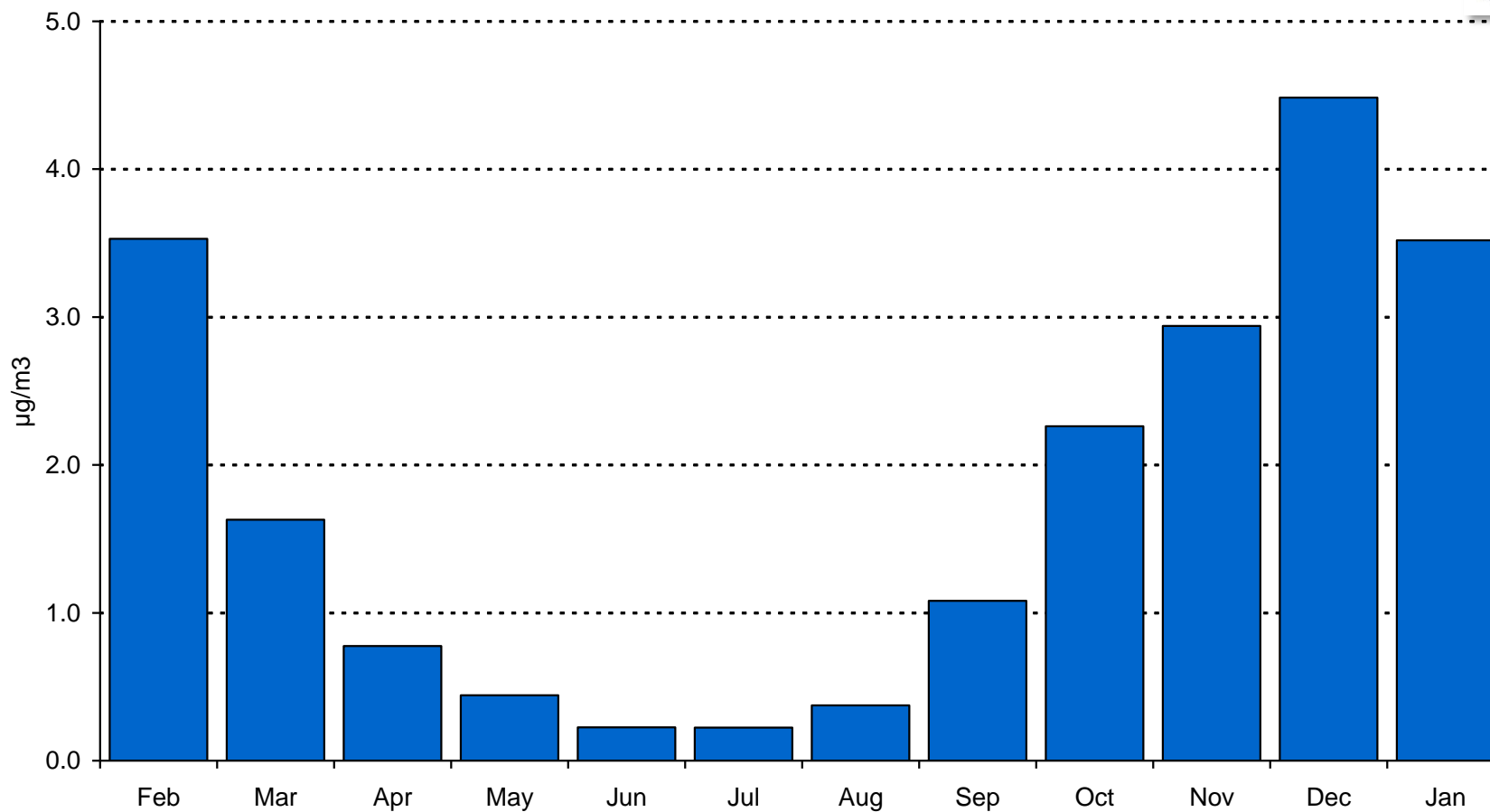
Hoe berekenen we de bijdrage van hout ?



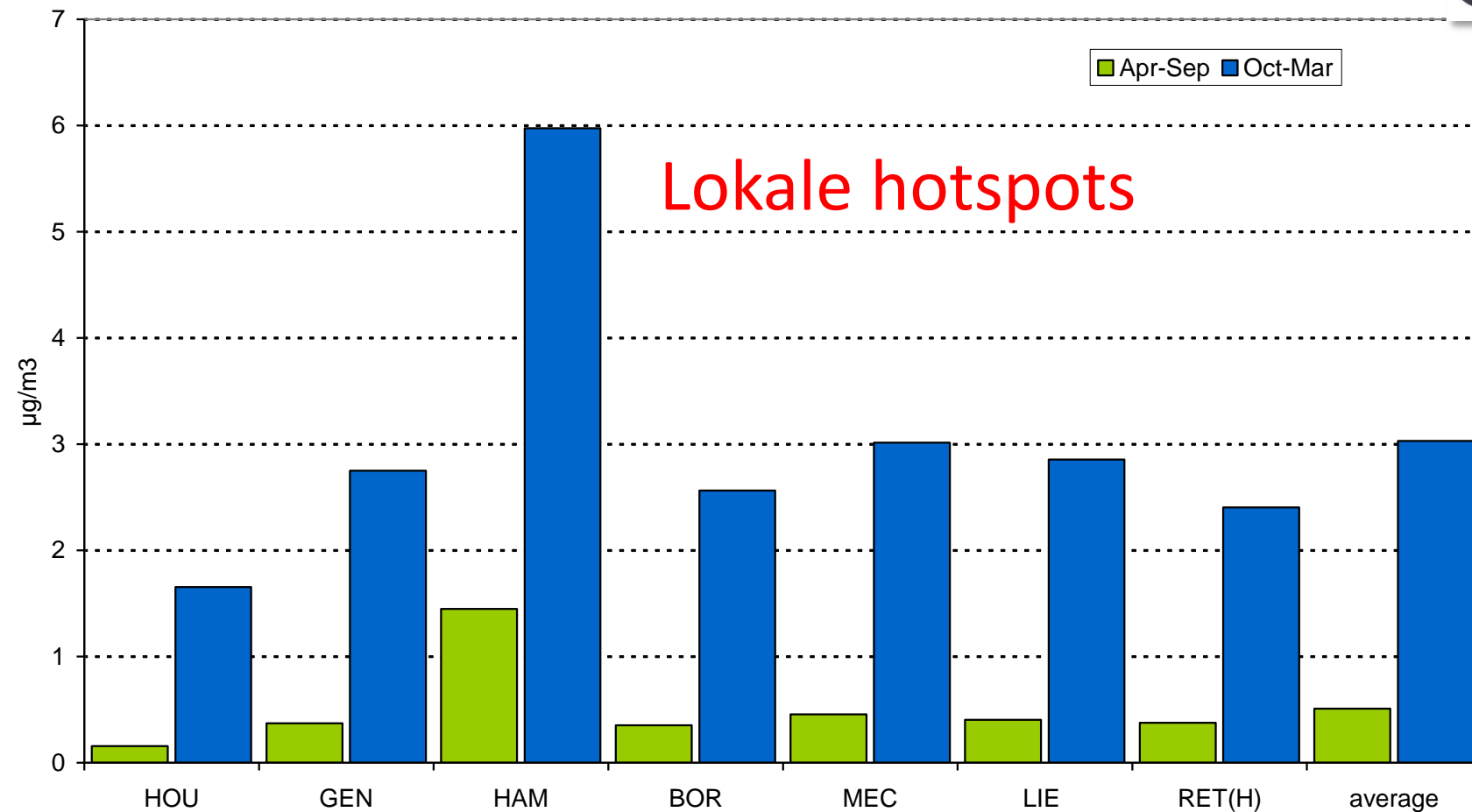
PM (hout) = 10,7 Levoglucosan



Bijdrage van houtverbranding aan PM10



Bijdrage van houtverbranding aan PM10



Aandeel buitenland ???

Bijdrage van houtverbranding aan PM10



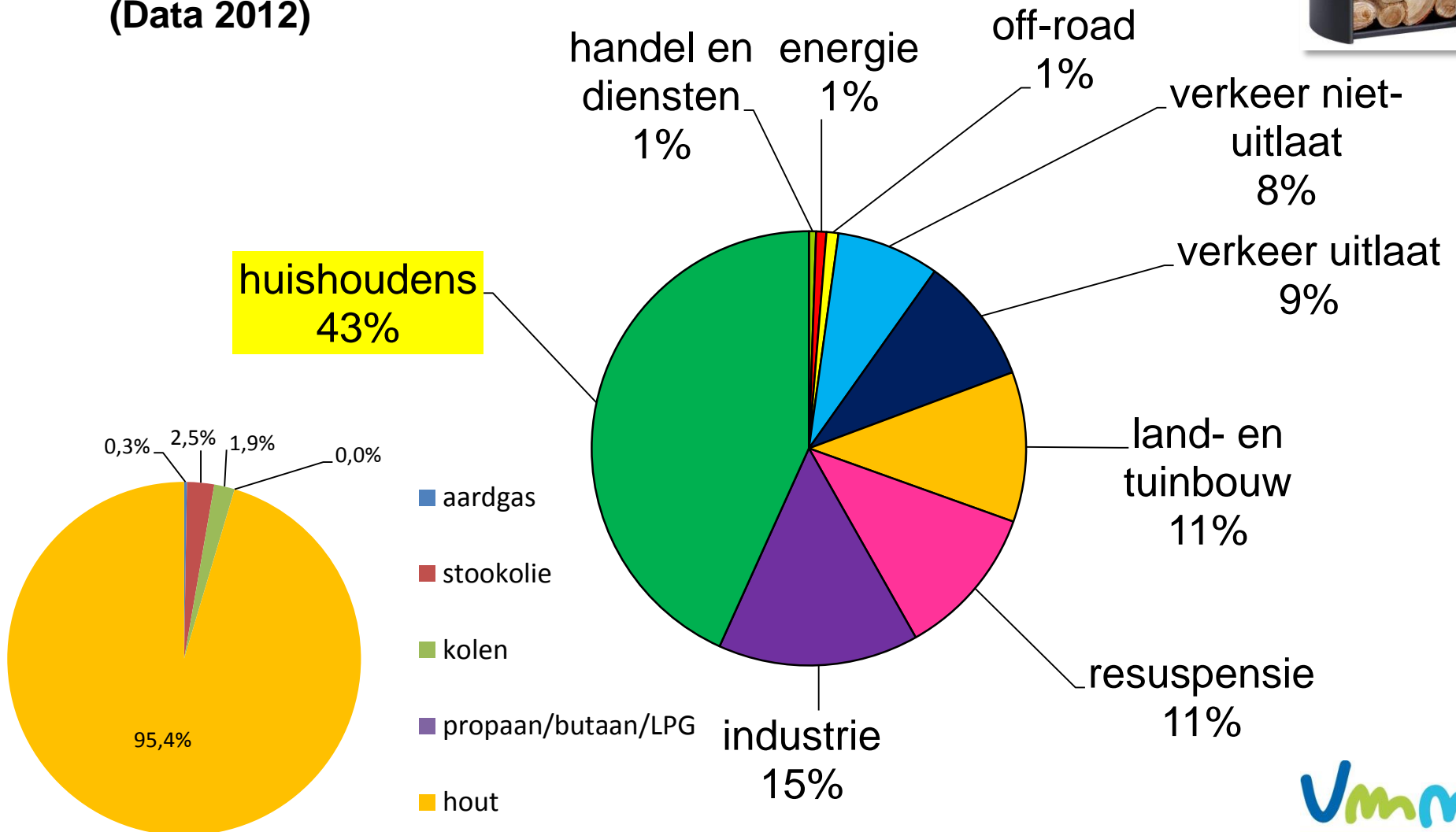
- Jaarbasis:
gemiddeld 7% van PM10 (4% - 13%)
- **Wintermaanden:**
gemiddeld 11% van PM10 (7% - 18%)
- Op dagen met hoge stofconcentratie ($> 50 \mu\text{g}/\text{m}^3$):
gemiddeld $6 \mu\text{g}/\text{m}^3$

>> zonder houtverbranding (veel) minder overschrijdingsdagen

Berekende bijdrage aan PRIMAIR PM10



(Data 2012)



Wat krijg ik voor mijn stof ?



4 kg in open haard



13 kg in moderne kachel



40 kg in pelletkachel

50 g PM10=



>Parijs (300 km)



>Zwitserland (600 km)



>Andorra (1100 km)

Hoe vervuiling beperken ?



Luchtvervuiling =

- **Hout**
(zuiver + droog)
- **Kachel + schouw**
(KB12/10/2010)
- **Manier van gebruik**
(www.stookslim.be)
- **Weer**
(inversies!)

Hoe vervuiling beperken ?



Uitdaging ?



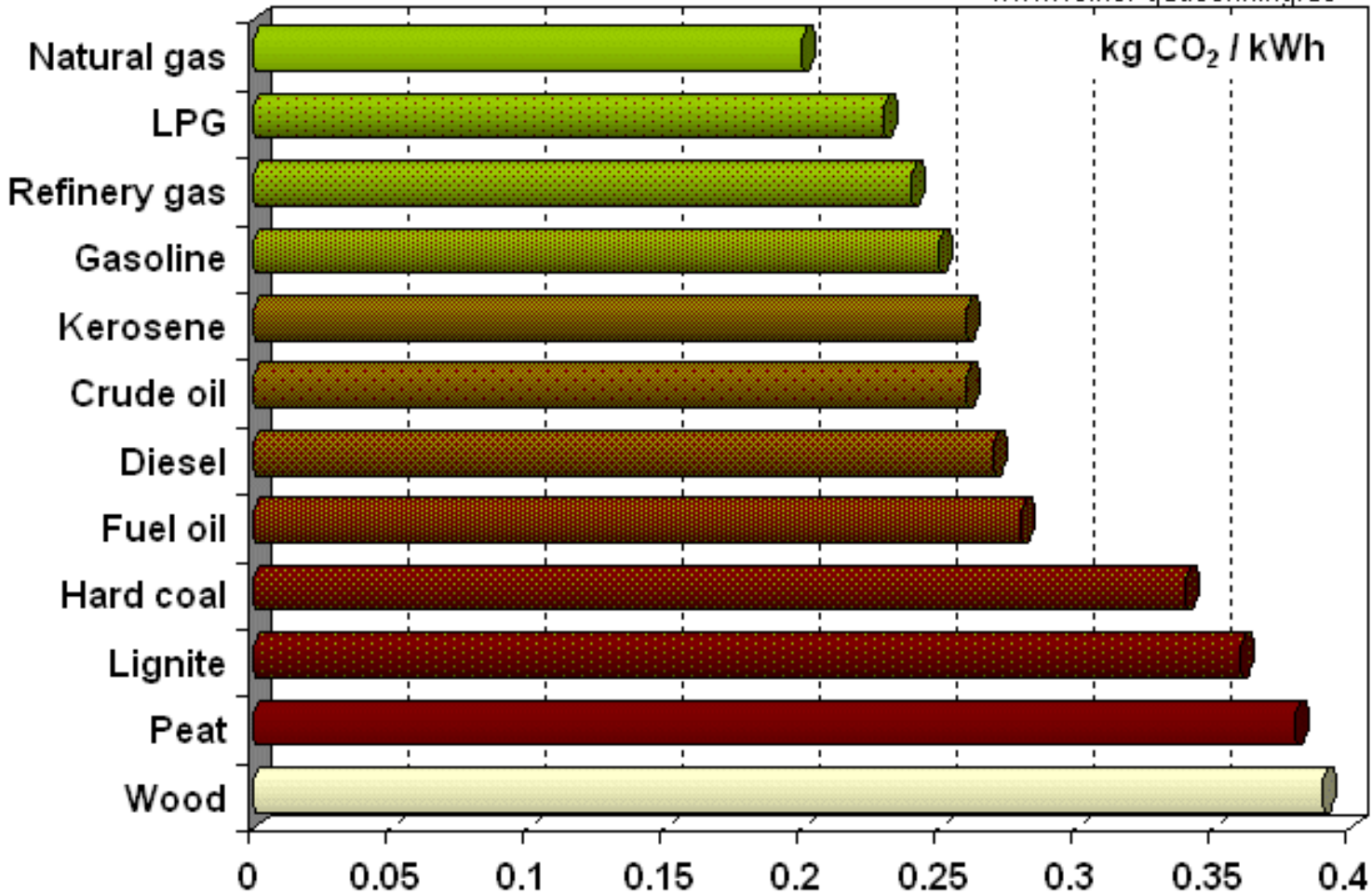
Is hout verbranden duurzaam?

Duurzaam ?

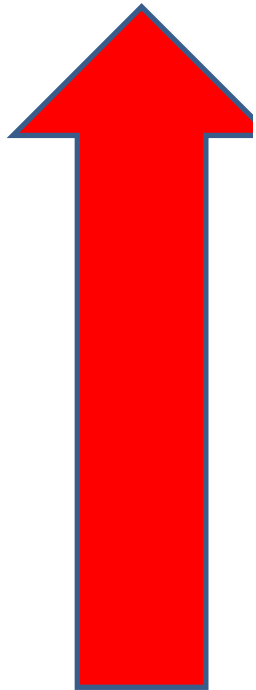


www.volker-quaschnig.de

kg CO₂ / kWh



Duurzaam ?



CO2 + roet

Koolstofschuld
(10-100 jaar)

+ verwerking + transport + landgebruik +

Duurzaam ?



IPCC (2014): “negative emissions”
... nieuwe bossen !



Wat kunnen we doen ?



San Fransisco Bay Area
(> 7.000.000 inwoners)

During a **Winter Spare the Air Alert**, the use of **fireplaces, pellet stoves, wood stoves, fireplace inserts and outdoor fire pits** is illegal.

Those who burn wood during a **Winter Spare the Air Alert** will receive a warning for the first violation. A second violation may result in a \$400 ticket.

Laatste 5 winters:
4 – 30 alerts

Conclusie

- Belangrijke bijdrage
 - Toxisch
 - Jaarlijks 1-4 $\mu\text{g}/\text{m}^3$
 - Hoger in de winter
- Locale hotspots! (moeilijk te meten)
- Vaak belangrijk op dagen met veel fijn stof
 - >> Tijdelijke maatregelen!!! *“check before you burn”*
- Bomen planten vs. Hout verbranden !



Enkele interessante links

<http://www.vmm.be/pub/chemkar-pm10-chemische-karakterisering-van-fijn-stof-in-vlaanderen-2010>

<http://www.lne.be/campagnes/stook-slim/stook-slim/binnen-stoken-faqs>

<http://www.lne.be/campagnes/stook-slim/stook-slim/binnen-stoken-faqs/goedepraktijkrookgasafvoerkanalen.pdf>

<http://www.lne.be/campagnes/stook-slim/stook-slim/binnen-stoken-faqs/kb-verwarmingsapparaten.pdf>