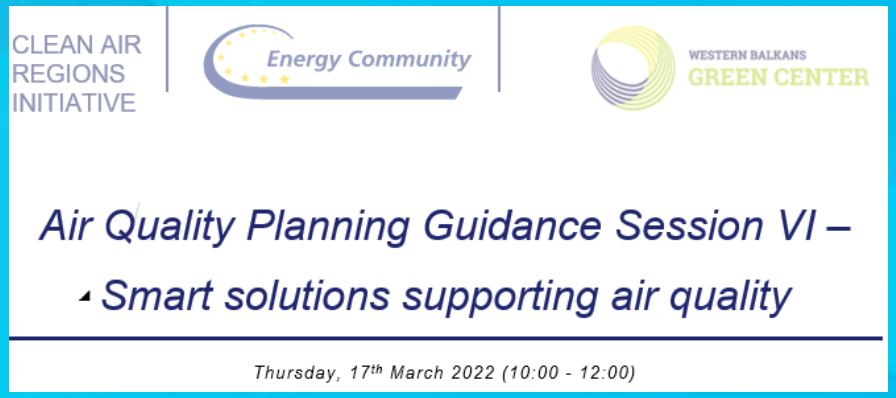
Support for air quality measurement stations

Judit Szegő

Clean Air Action Group, Hungary



Levegő Munkacsoport

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Clean Air Action Group

Celebrating the 30th anniversary of CAAG's foundation (November 2018)

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The Clean Air Action Group (CAAG) was founded in 1988.

It is today a national association of 39 (in 2009: 132!) Hungarian environmental NGOs.

Full-time employees: 7 persons
(in 2009: 17 persons)
Part-time employees: 2 persons

Experts' Committee: 69 persons

Revenue in 2020: about 180,000 EUR + in kind
(in 2009: about 400,000 EUR)

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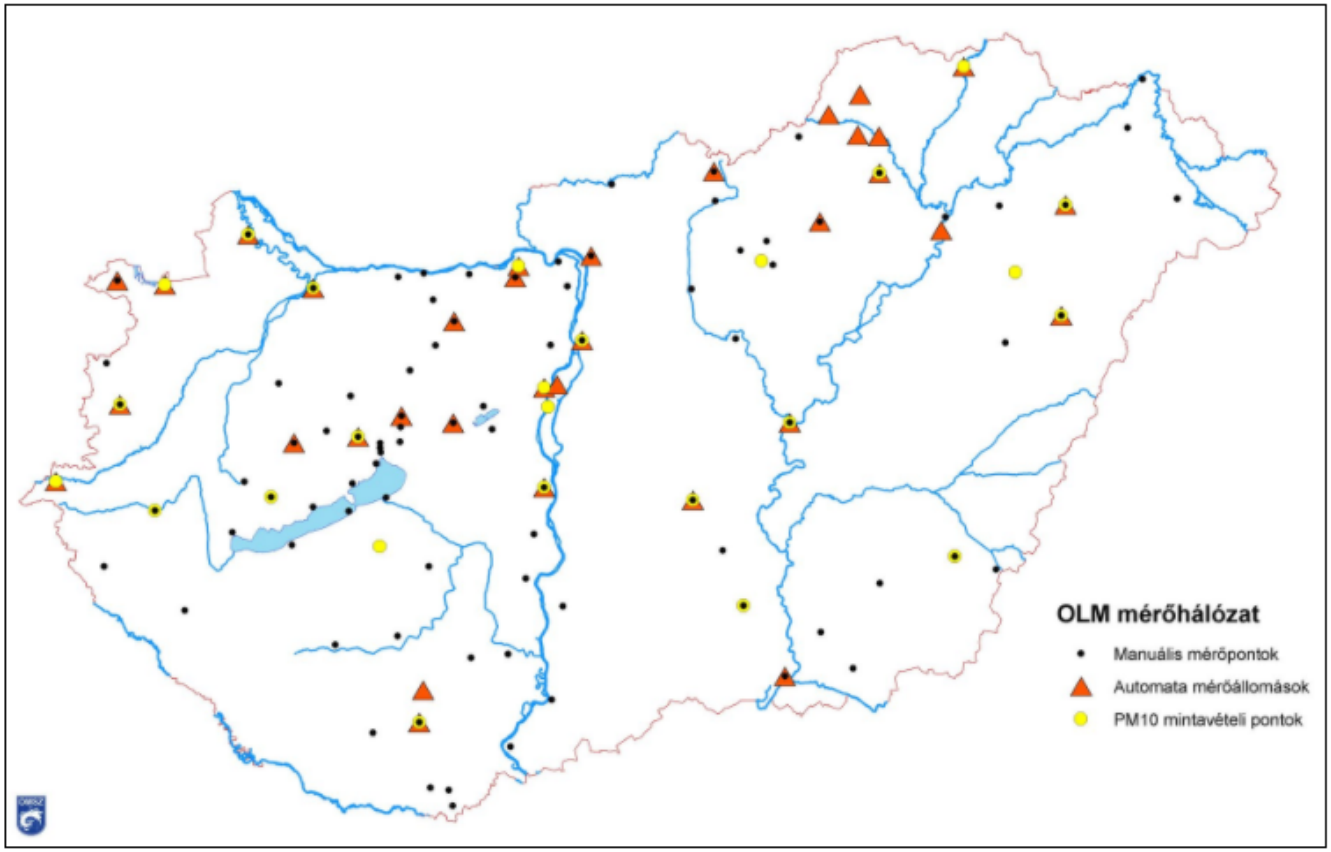
CAAG works mainly on greening

- the state budget and taxation system
- EU budget
- transport
- energy
- urban management and urban development (including protection of green areas)

CAAG is a member organisation of 7 major European NGOs

The problems of official measuring stations
1. Too few stations



Az Országos Légszennyezettségi Mérőhálózat mérőpontjai és mérőállomásai

Levegő

The problems of official measuring stations

2. No reliable data on air quality where you live, work, walk, bike, etc.

Photo: Zsolt Horváth

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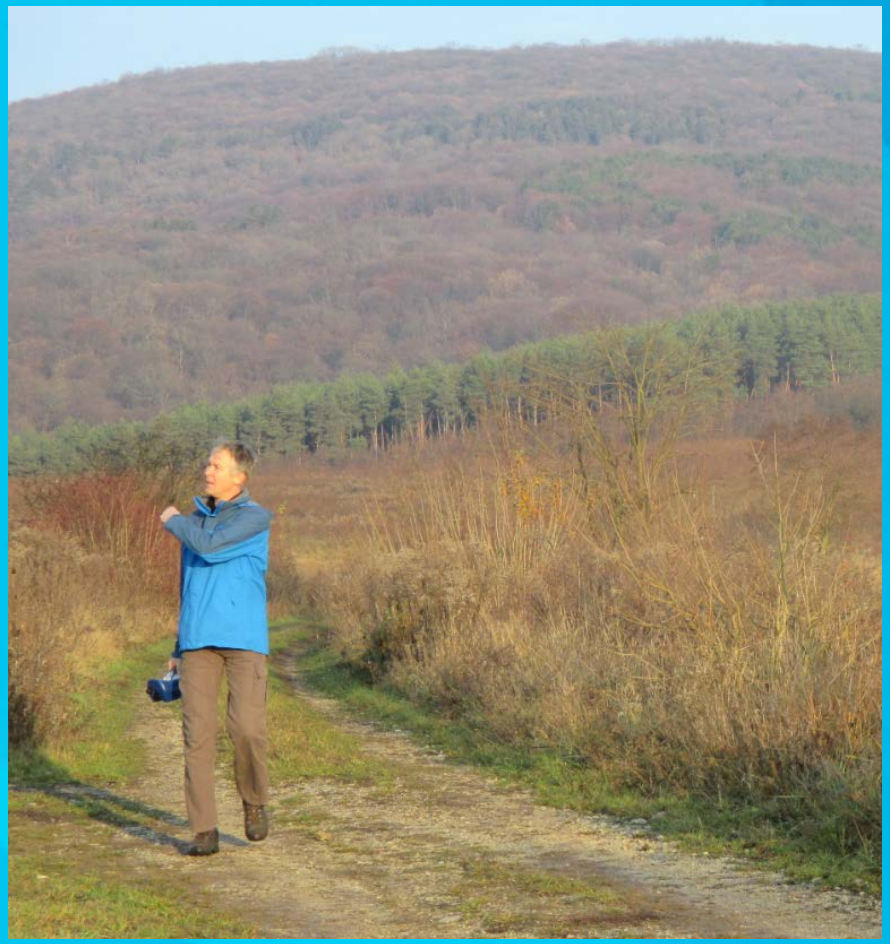


Photos: András Lukács

The problems of official measuring stations

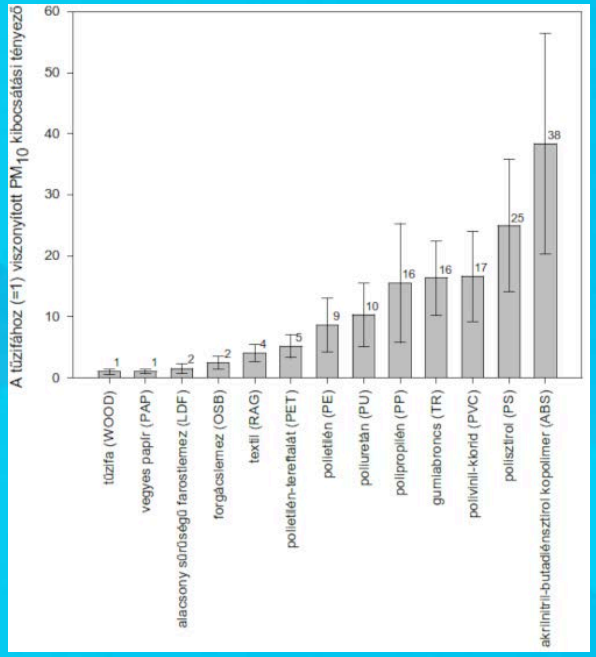
3. No information on the toxicity of the pollutants

A Levegő Munkacsoport blogja
A tiszta levegőért

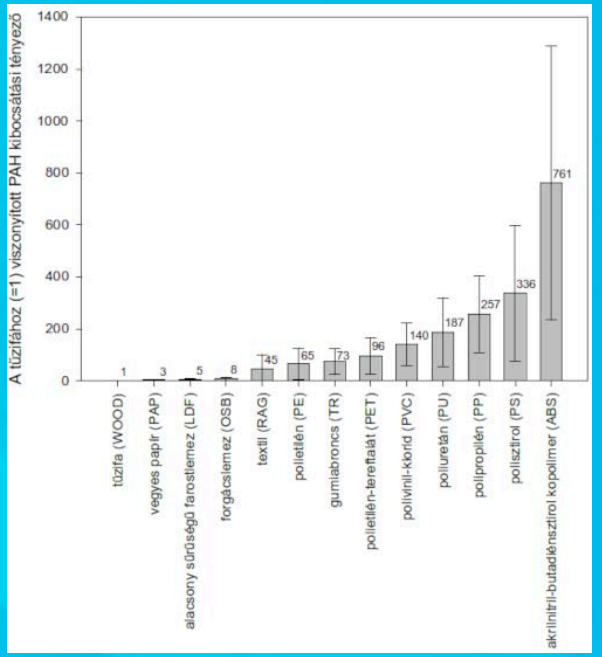
Egy új kutatás szerint a lakossági hulladékégetés ezerszer mérgezőbb lehet, mint a tűzifa elégetése

https://levegomunkacsoport.blog.hu/2020/07/20/egy_uj_kutatas_szerint_a_lakossagi_hulladekegetes_ezerszer_mergezobb_lehet_mint_a_tuzifa_elegetese

A különböző hulladéktípusok égetésének PM10-kibocsátása (mg/g) a száraz tűzifáéhoz viszonyítva



A hulladékminták égetése során mért PAH-kibocsátás a tűzifáéhoz viszonyítva



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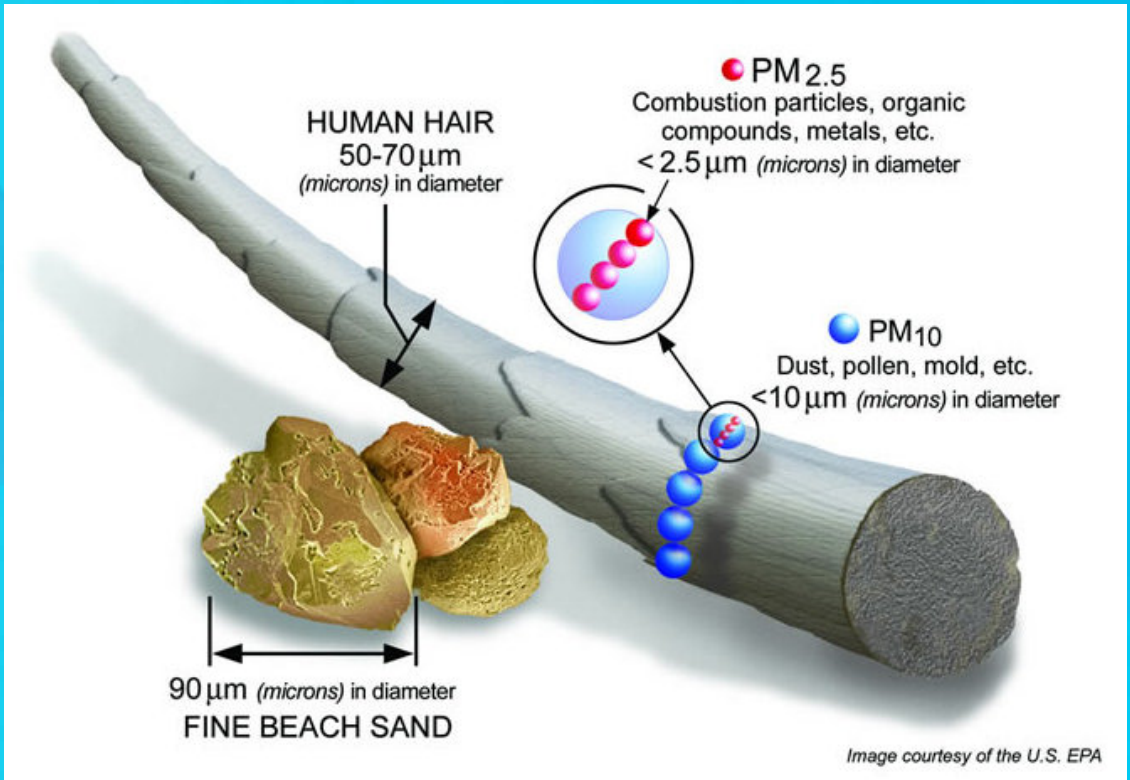
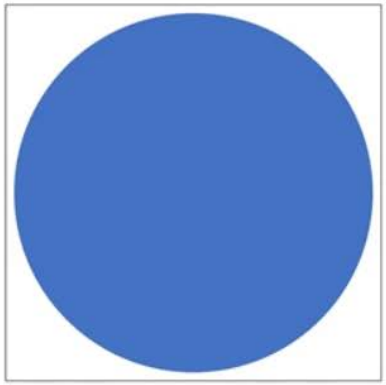
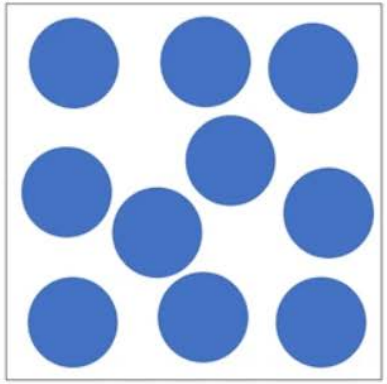
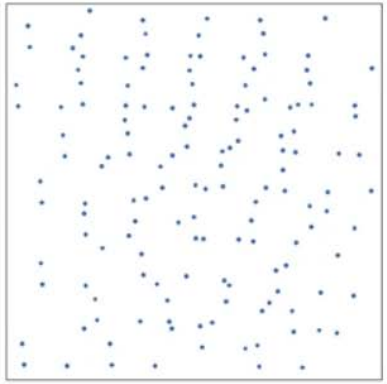
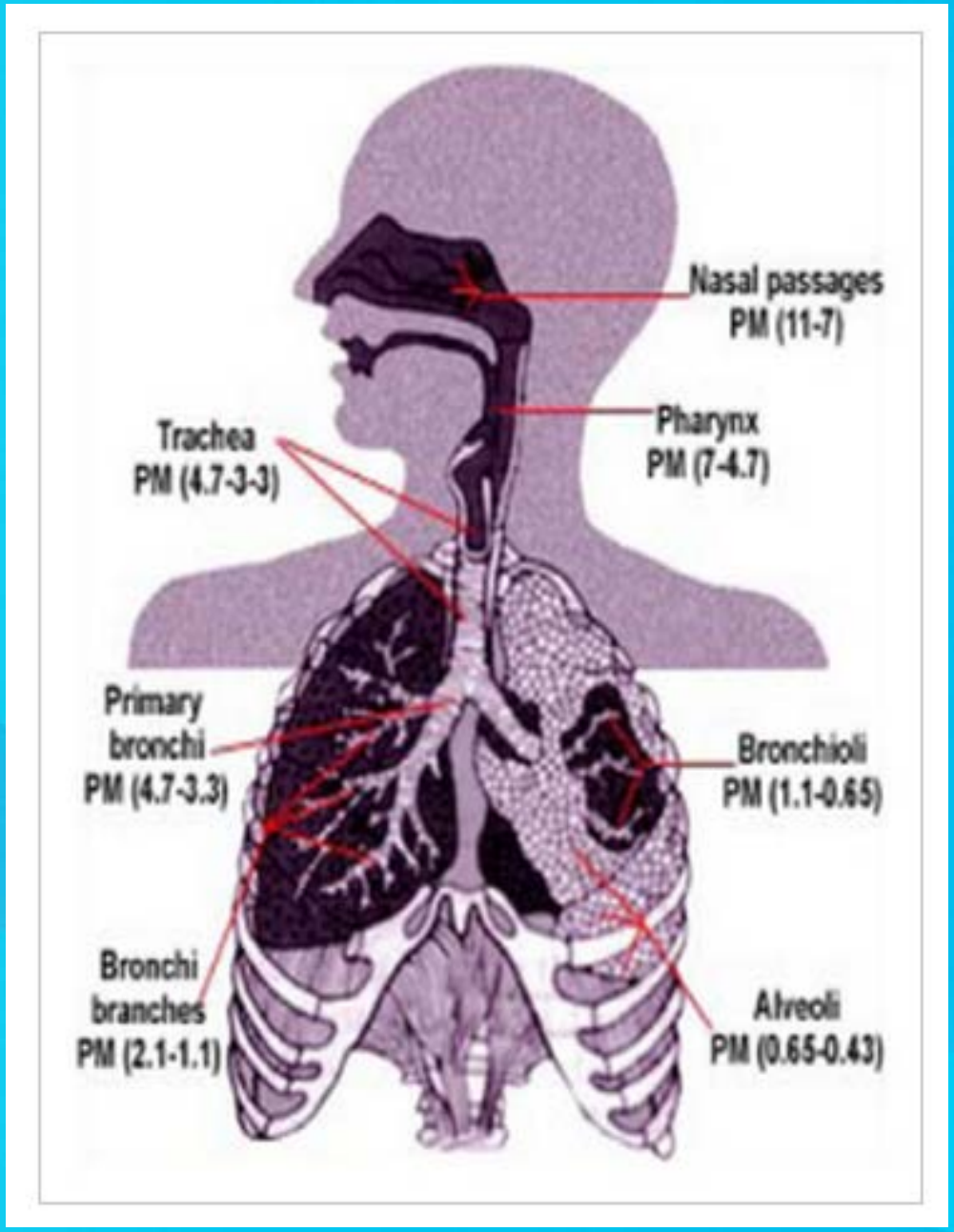
The problems of official measuring stations

4. No information about the size and number of ultrafine particles



	10 µm (Coarse)	2.5 µm (Fine)	0.1 µm (Ultrafine)
			
Total mass	1	1	1
Particle number	1	64	1,000,000
Surface area per particle	1	0.0625	0.0001
Total surface area per mass	1	4	100
	• Filtered in proximal airway • May irritate skin, mucosa	• Reaches peripheral airway • Cannot enter systemic circulation	• Higher adsorbed toxic material on surface • May enter systemic circulation

https://www.nature.com/articles/s12276-020-0405-1


Nasal passages
PM (11-7)
Pharynx
PM (7-4.7)
Trachea
PM (4.7-3-3)
Primary
bronchi
PM (4.7-3.3)
Bronchioli
PM (1.1-0.65)
Bronchi
branches
PM (2.1-1.1)
Alveoli
PM (0.65-0.43)

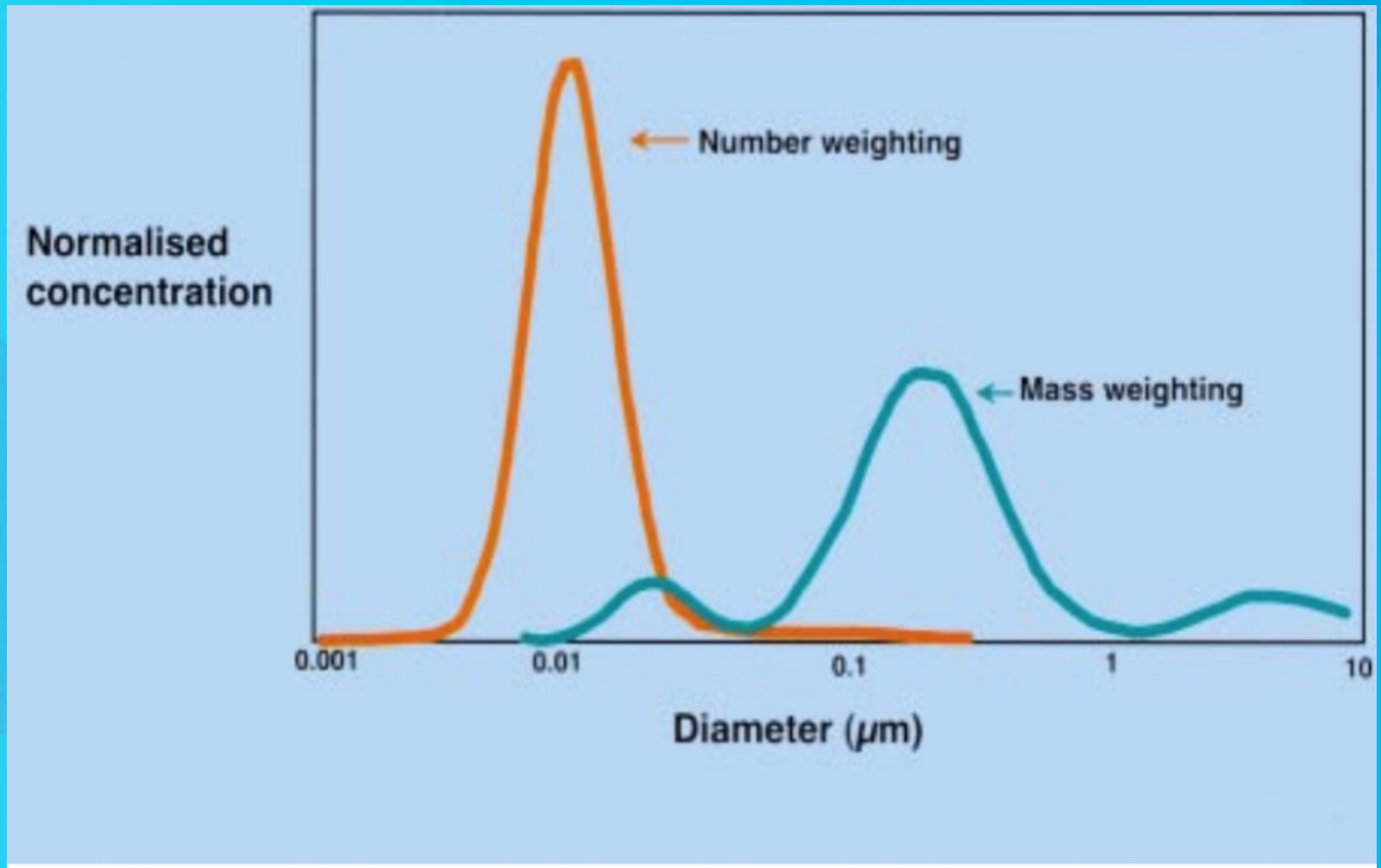


Figure 5. Typical size distribution of urban PM10

	PM_{10}		$PM_{2.5}$		$PM_{0.1}$		NO_2	
	µg/m³	%	µg/m³	%	number/cm³	%	µg/m³	%
Pollution from sources outside the city	16	52	10	66.5	2500	18,5	9	16.5
Pollution from sources within the city	1	3	1	6.5	2500	18,5	8	14.5
Background pollution from all sources	17	55	11	73.5	5000	37	17	31
Pollution from road traffic on H.C. Andersen' Boulevard	14	45	4	26.5	8500	63	38	69
Resulting concentration on H.C. Andersen' Boulevard	**31**	**100**	**15**	**100**	**13,500**	**100**	**55**	**100**

Table 3: *Sources for the annual average pollution levels of particles and nitrogen dioxide on H.C. Andersen' Boulevard in Copenhagen.* Source: The Danish Centre for Environment and Energy, 2013.

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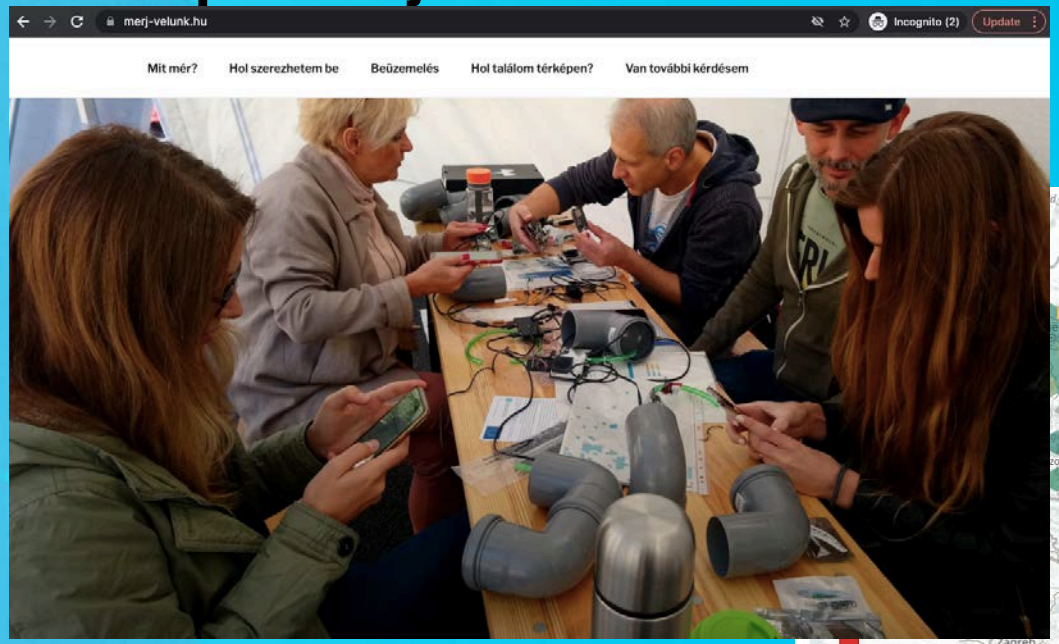
http://shop.ecocouncil.dk/varedetaljer.asp?shopid=851152&funique=244&kat=16&hkat=6&varegruppe=12

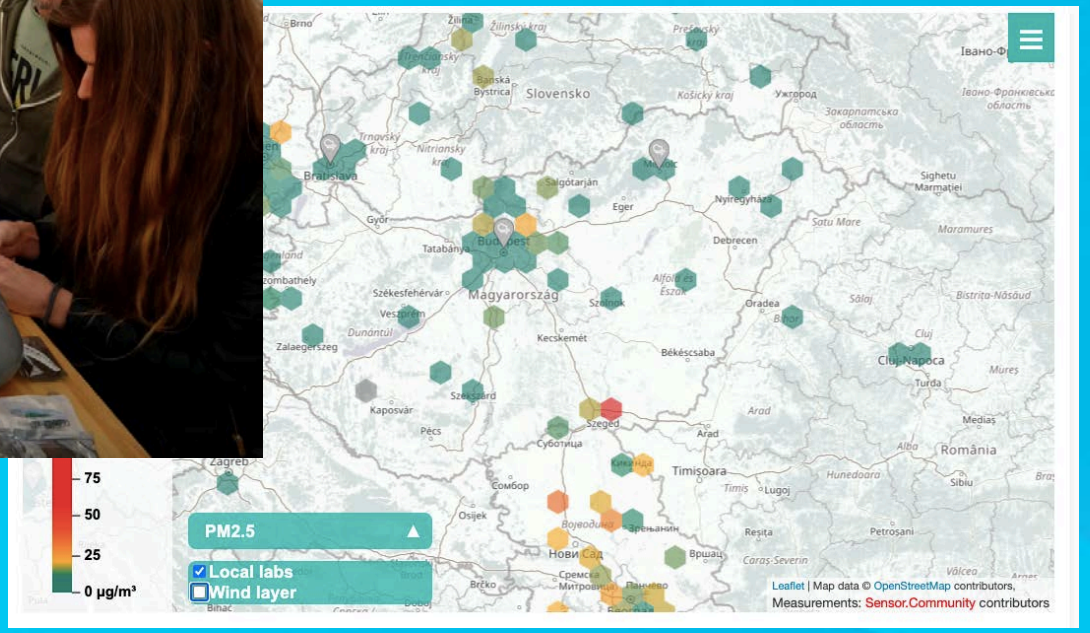
Solutions

1. Citizen science

Citizen science (~250):
http://merj-velunk.hu



SENSOR.COMMUNITY



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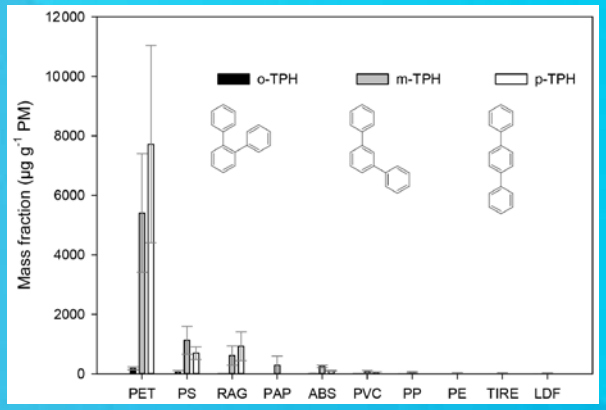
Solutions

2. Measurement of the toxicity of PM in the ambient air



acp.copernicus.org/articles/21/17855/2021/acp-21-17855-2021.html

Research article

07 Dec 202

Potential new tracers and their mass fraction in the emitted PM_{10} from the burning of household waste in stoves

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Abstract

The production and use of plastics is increasing rapidly as they are widely used in packaging, construction materials, furniture, foils, etc. As a consequence of their widespread use and often disposable nature, vast streams of plastic waste are continuously generated, a considerable fraction of which are combusted in households worldwide. In this paper, various types of commonly used plastics (PE, PET, PP, PU, PVC, PS, ABS) as well as treated wood samples (LDF, low-density fibreboard) and firewood were combusted separately in a test stove under controlled conditions. The particulates emitted during the combustion test were collected on filters, potential tracers for each waste type were identified by GC-MS, and their relative abundances were

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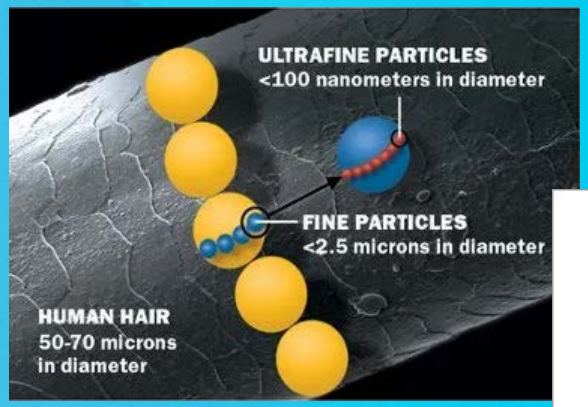
https://acp.copernicus.org/articles/21/17855/2021/acp-21-17855-2021.html

Solutions

3. Measurement of the number of ultrafine particles and adoption of limit values in ambient air



No limit value for the most dangerous

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Solutions

4. Continuous and widespread awareness raising about the sources, types and effects of air pollution and about the possible solutions

Béres Alexandra, Jaksity Kata, Tóth Vera, Molnár Áron, Németh Kristóf és Puskás Peti közös filmben kampányol a lakossági hulladékégetés ellen

https://www.youtube.com/watch?v=EqiyIOj0dg8&ab_channel=Leveg%C5%91Munkacsoportvide%C3%B3t%C3%A1ra

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Köszönöm a megtisztelő figyelmüket!
Multan dankon pro via atento!
Thank you for your attention!
Dekuji za pozornost!
Merci beaucoup pour votre attention!
¡Gracias por la atención!
Vielen Dank für Ihre/Eure Aufmerksamkeit!
Grazie per l’attenzione!
Asante kwa kunisikiliza!
Дякую за увагу!
Көңүл бургандарыңыз үчүн рахмат!
Спасибо за Ваше внимание!

ありがとうございます

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