aVLOZ0241c: Public health - practice

Environmental Health

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Environmental Health - definition

- Broad discipline that focuses on environmental factors that causes or influences health:
  - Air
  - Water
  - Soil
  - Food.
    - *Why* food?
    - Correct answer: Food is produced in particular environment. Food is a medium of a "remote environment" that someone's health is going to influence everyday.

Public Health

- A set of activities and actions contributing to
  - the prevention of major health disorders
  - the prevention of spread of infectious diseases
  - the creation and protection of healthy living and working conditions.
- Institutions in the Czech republic:
  - The Regional Public Health authorities: state executives
    - for example: http://www.khsova.cz, web in in english
  - The National Institute of Public Health, Prague (http://www.szu.cz, in english)
  - Tip: try to search on the web a public health authorities and public health institutions in your country!
- The Law on Protection of Public Health, health aspects of other laws

Other institutions

- World Health Organization (http://www.who.int)
  - Health topics: Environmental health
- U. S. Environmental Protection Agency (http://www.epa.gov)
  - agency of the U.S. federal government which was created for the purpose of protecting human health and the environment
  - "Top star" in methodology of Public Health

Role of clinicians in environmental health

- A clinician should have been…
  - a resource of information
  - a risk communicator for patients

Has a patient an adverse effect? **KEY QESTIONS**

1. A clinician should…

   1. identify a hazardous / harmful environmental agent
   2. determine the size of adverse effect…
   3. … on the base of the exposure assesment

Examples and Illustrations

- Risk Bites - Youtube channel by Andrew Maynard, Director of the Risk Innovation Lab, Arizona State University
  - How much *pee* could you end up swallowing while swimming? URL: https://youtu.be/GIU8Qwf6Snk
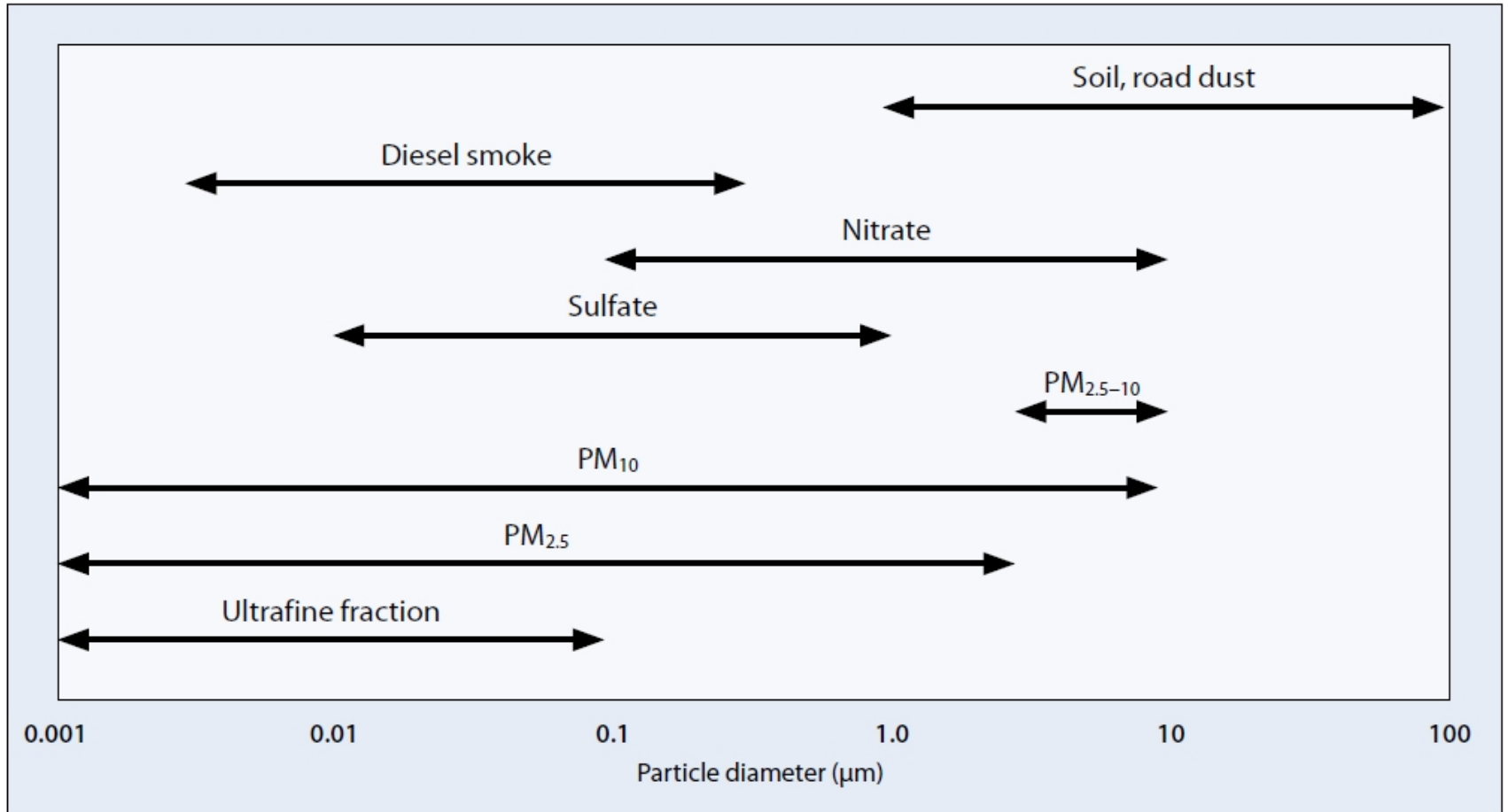 - Don't panic! URL: https://youtu.be/MQUB_awofM

Exercise!

- Fill-in the form: **Create your risk sentence!**
  - example: *Too loud music listening is a risk for hearing disorders.*

Key issues of the environmental health

- Particulate matters (PM) = sulphates + nitrates + ammonia + sodium chloride + black carbon + mineral dust + water + other minor components
  - Coarse type of PM: aerodynamic diameter 10 micrometres; PM_{10}
  - Fine type of PM: aerodynamic diameter 2,5 micrometres; $PM_{2,5}$
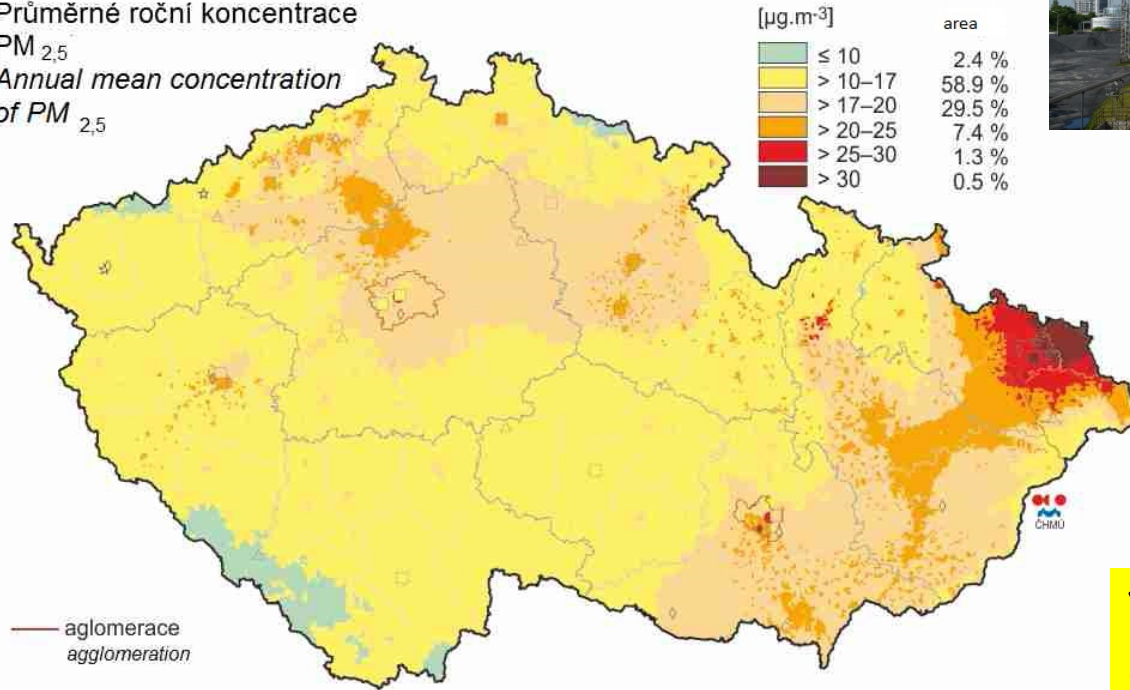
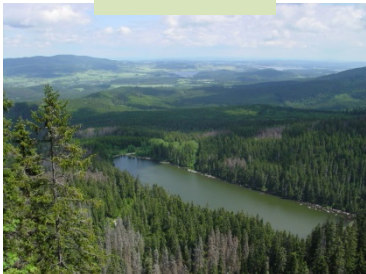# Size range of Particulate Matters (WHO, 2005)

Discover the Czech republic

Brown areas

Red areas

Průměrné roční koncentrace PM $_{2,5}$
Annual mean concentration of PM $_{2,5}$

	[μg.m^{-3}]	area
	≤ 10	2.4 %
	> 10–17	58.9 %
	> 17–20	29.5 %
	> 20–25	7.4 %
	> 25–30	1.3 %
	> 30	0.5 %

ČHMÚ

— aglomerace
agglomeration

Green areas

Yellow areas

Discover the Czech republic

- The **red areas** on the map: Moravian-Silesian Region, the most agglomeration Ostrava-Karvina, the region is extensively burned by Industry where crucial emissions stem from large industrial sources.

  - *the most popular places for Oil Gobblers in nowadays :-)*

- The brown areas on the map („brown fields" in urban planning): Prague - Capital city, Brno, North Bohemia region etc. are polluted in relation to traffic and its associated processes (corrosion, abrasion etc.) mostly. Long-term comparisons clearly illustrate the relationship between measured concentrations of PM and traffic intensity!

Discover the Czech republic

- The **yellow areas** on the map: rural or agricultural background - grasslands, forests, uncultivated and cultivated grounds, water areas etc. Local sources of the air pollution are associated with traffic (transit motorways) and domestic heating.

- The green areas on the map: national parks, rest areas situated mostly in mountains, minimum of the air pollution, special land use.

Based on a the monitoring of the selected quality indicators. Concentrations of airborne pollutants have been obtained from a network of the measuring stations operated by the National Instiue of Public Health, Prague.

Oil Gobblers (mocumentary, 1988): a few notes

- Environment of the Northern Bohemia was really so horrible at that time
- These are not tricks of film studios
- The filmmakers could show better landscape if they wanted…
  - yet they have been able to find places with practically toxic concentrations of pollutants
  - yet they have been find localities suitable to shoot some next movies showing the devasted environment

Conclussions

- The source of the environmental health data in the Czech republic is the National Institute of Public Health

  – some differences might be in Your country :-)

- After all, environmental pollution in the Czech republic has non-point character and have clear association with traffic intensity.

- We can identify some regions extensively burdened by heavy industry where the impacts in public health are not-negligible.