

Chemie životního prostředí II – Znečištění složek prostředí

Atmosféra

(12)

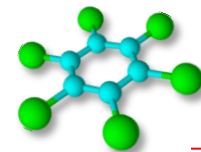
Vlivy znečištění ovzduší na zdraví

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Toxicological relevant chemicals



Pesticides



Products of combustion processes



Personal care products (PCP)



Food packages



Wastes



Textil

- Arsenic
- 2,4-D
- PVC
- Bisphenol A (BPA)
- Dioxin
- Formaldehyde
- Pesticides
- Brominated Flame Retardants
- Trichloroethylene
- Perchloroethylene
- Mercury
- (Hexavalent) Chromium
- Perfluorochemicals
- rBGH



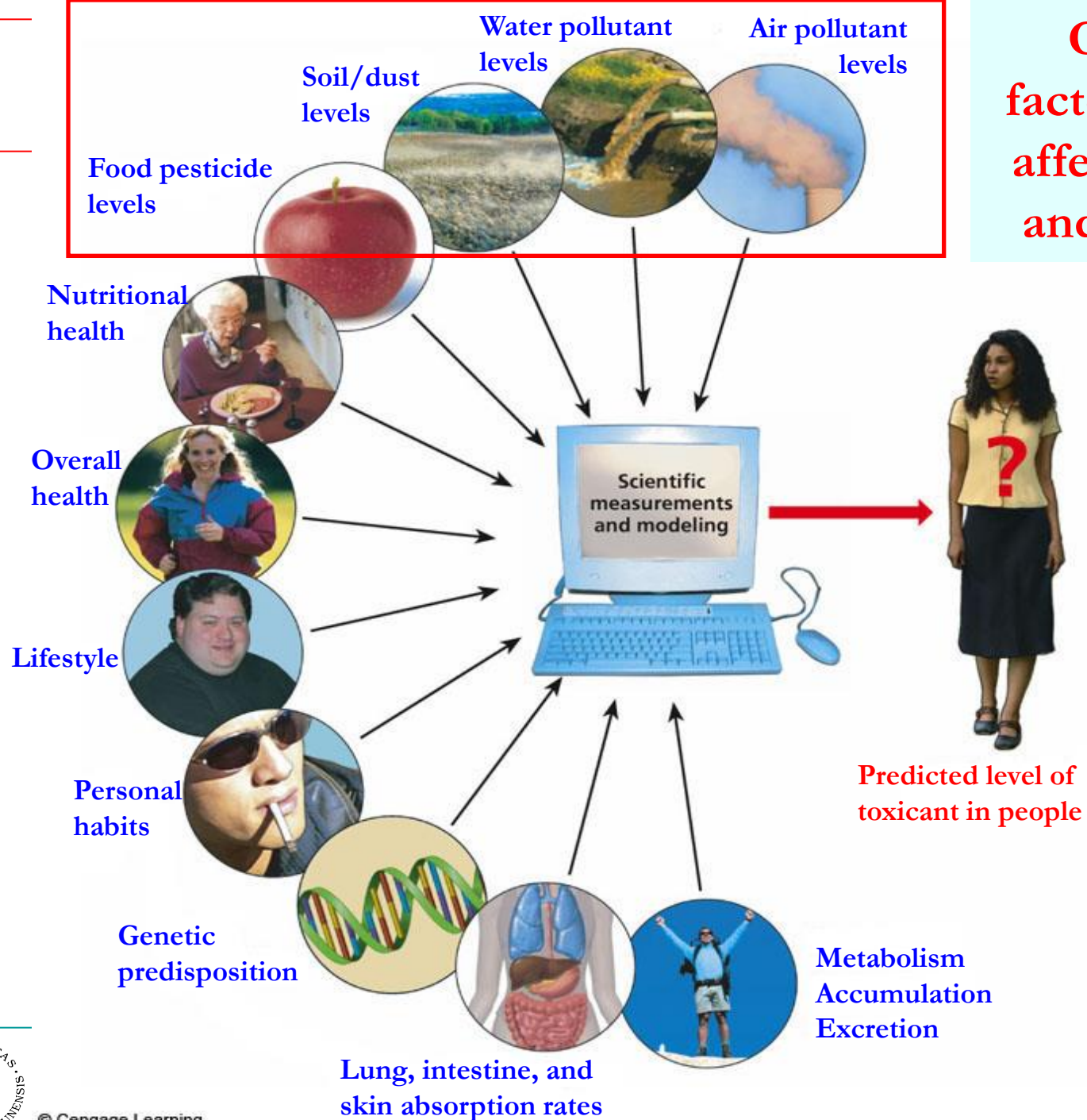
Expozice

Whole life exposure

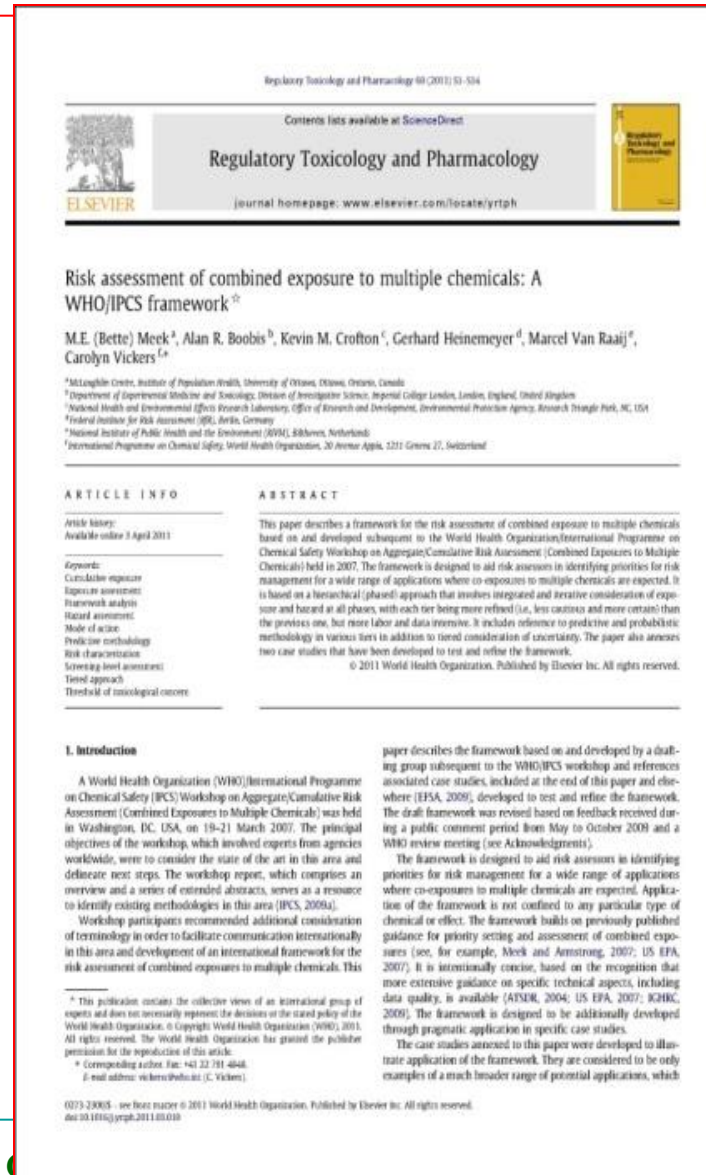
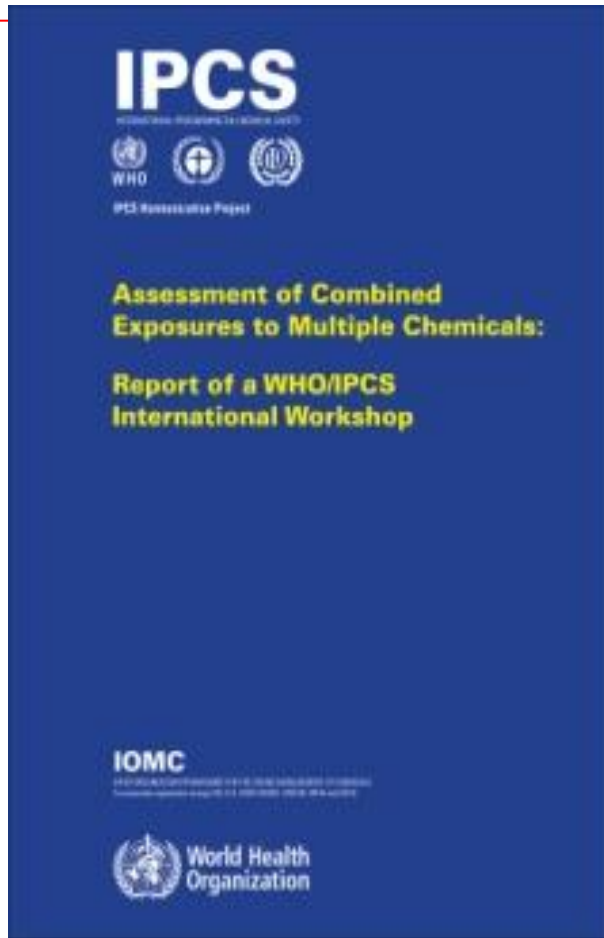
- SHAMPOO
Average number of chemicals: 15
- SUNSCREENS
- EYE SHADOW
Chemicals: 26
- LIPSTICK
Chemicals: 33
- BODY LOTION
Chemicals: 32
- DEODORANT
Chemicals: 15
- BLUSH
Chemicals: 16
- FAKE TAN
Chemicals: 22

Environmental occurrence = potential possibility of transfer to human organisms
 We have to determine the level of exposure in all age categories including prenatal period
 Health effects may be delayed until later in life

Overview of factors, which can affected exposure and human risks



Toxic interactions



Cesty expozice bioty EDCs ve vzdálených oblastech

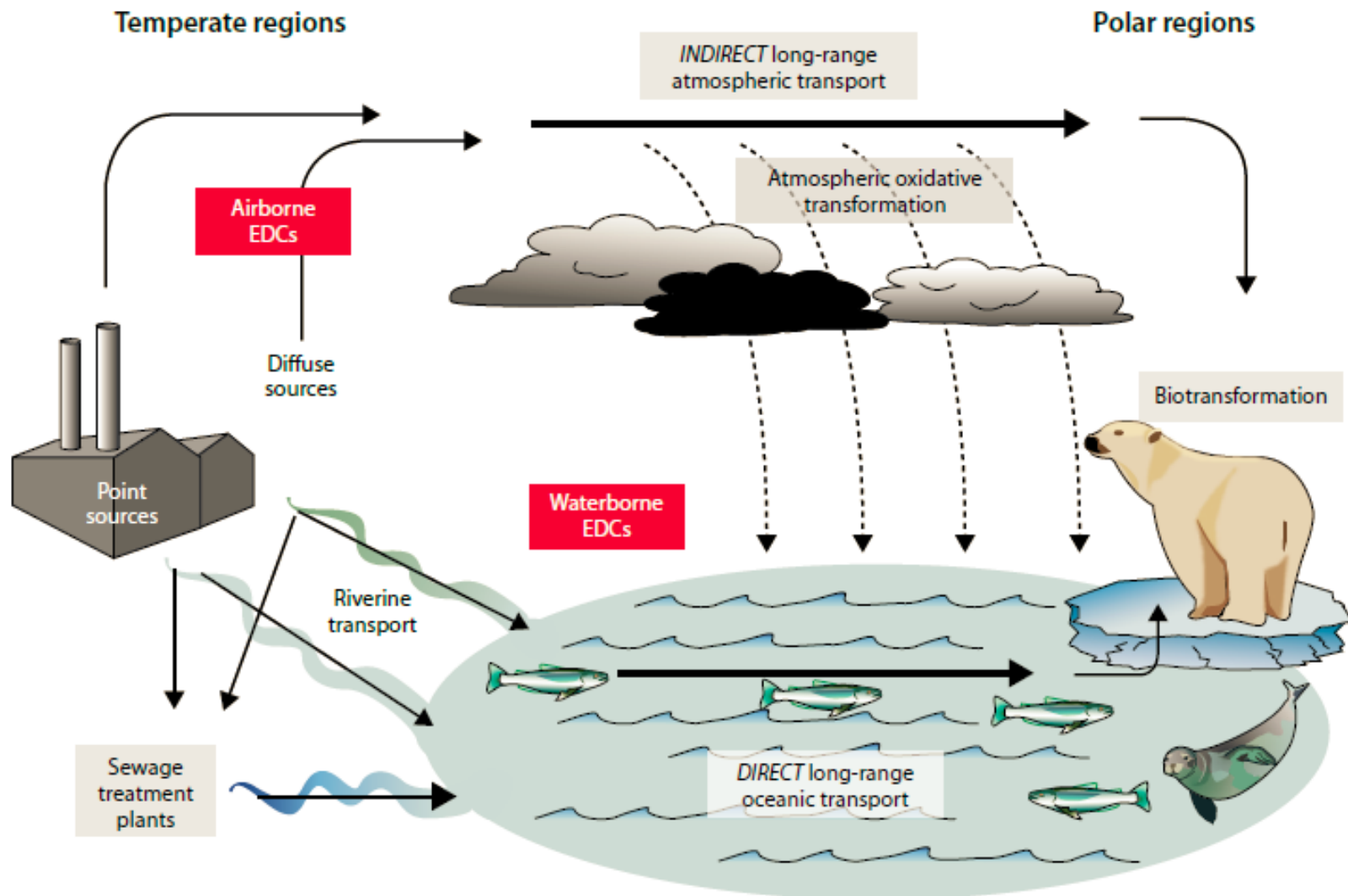
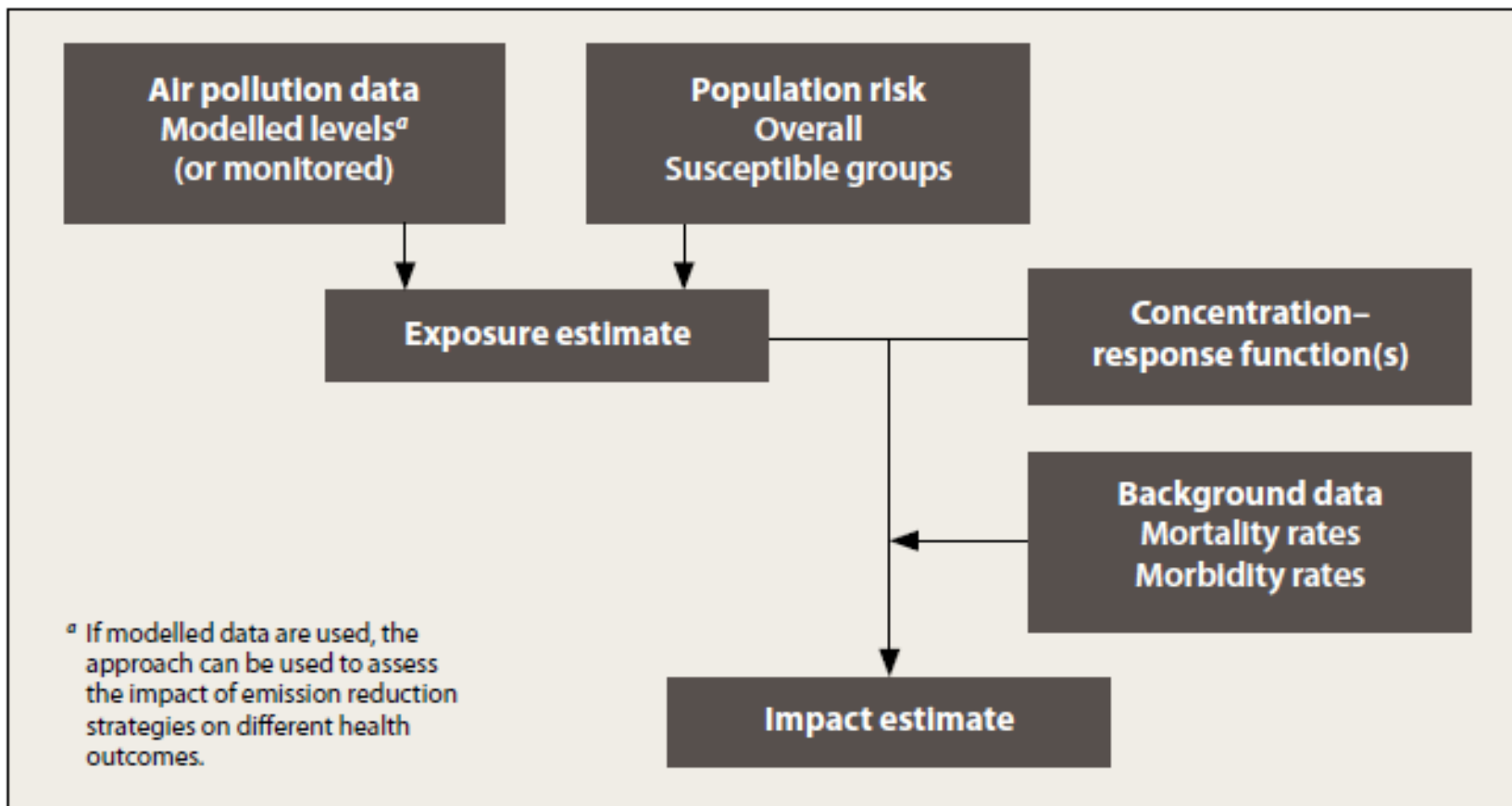


Figure 3.6. Routes of EDC exposure for biota in remote environments, illustrating the importance of long-range transport pathways for wildlife. Based on AMAP (2009).

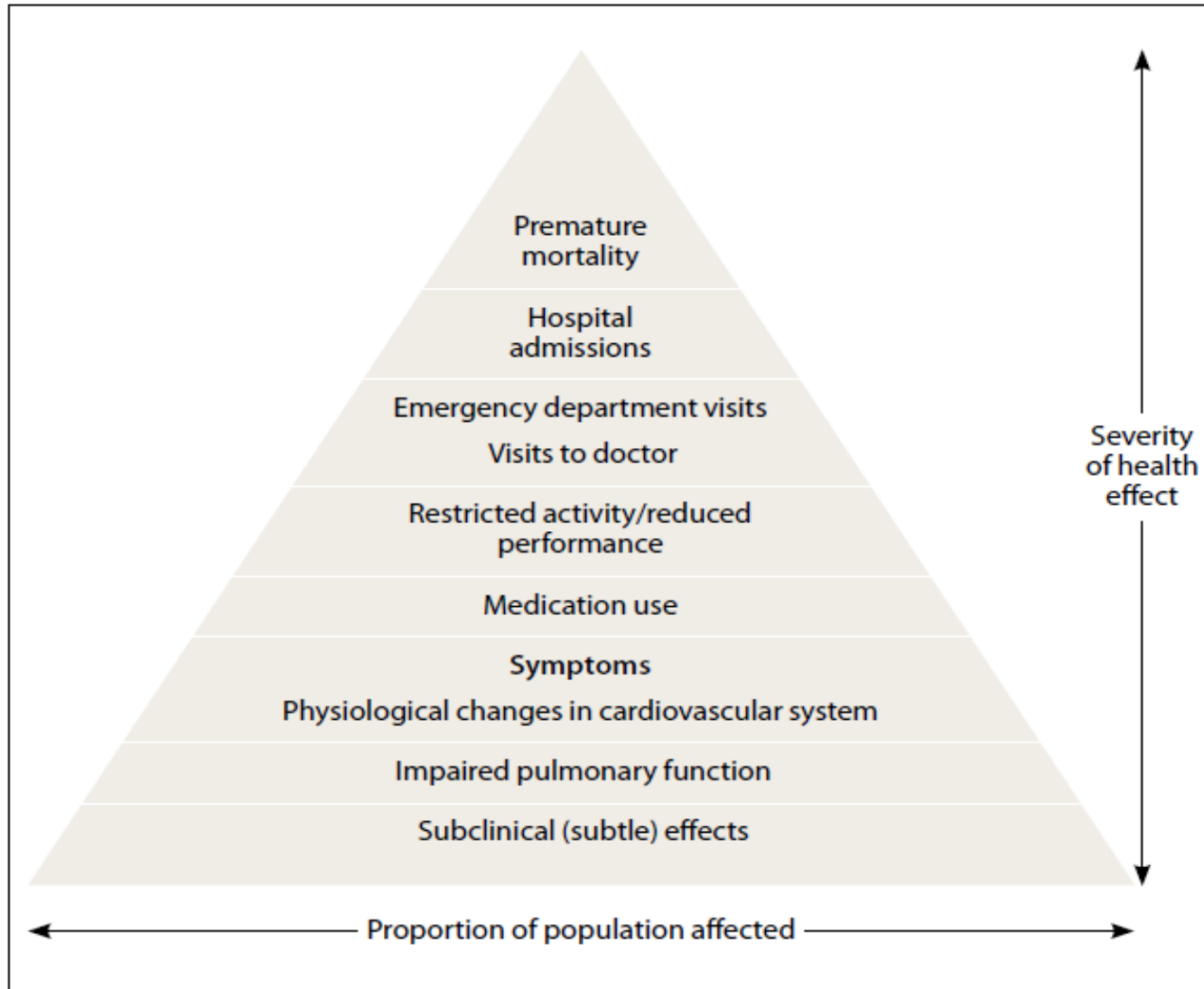
Hlavní kroky hodnocení zdravotních dopadů

Fig. 1. Schematic presentation of the main steps of health impact assessment



Pyramida účinků na zdraví spojených se znečištěním ovzduší

Fig. 1. Pyramid of health effects associated with air pollution



Source: American Thoracic Society (6).

Zdravotní účinky znečištěného ovzduší

Table 1. Health effects of air pollution

Effects attributed to short-term exposure

- Daily mortality
- Respiratory and cardiovascular hospital admissions
- Respiratory and cardiovascular emergency department visits
- Respiratory and cardiovascular primary care visits
- Use of respiratory and cardiovascular medications
- Days of restricted activity
- Work absenteeism
- School absenteeism
- Acute symptoms (wheezing, coughing, phlegm production, respiratory infections)
- Physiological changes (e.g. lung function)

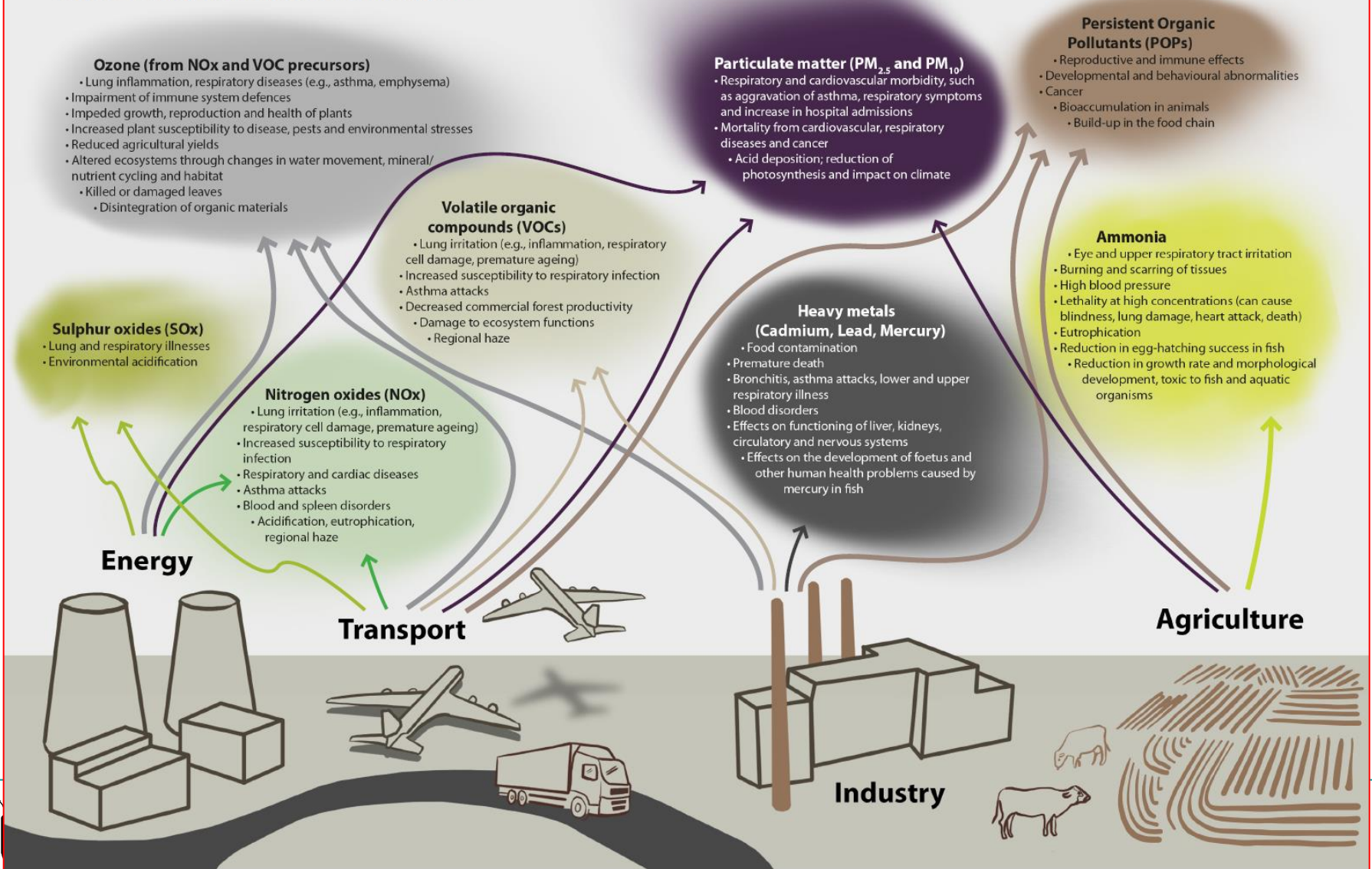
Effects attributed to long-term exposure

- Mortality due to cardiovascular and respiratory disease
 - Chronic respiratory disease incidence and prevalence (asthma, COPD, chronic pathological changes)
 - Chronic changes in physiologic functions
 - Lung cancer
 - Chronic cardiovascular disease
 - Intrauterine growth restriction (low birth weight at term, intrauterine growth retardation, small for gestational age)
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Source: World Health Organization (25).

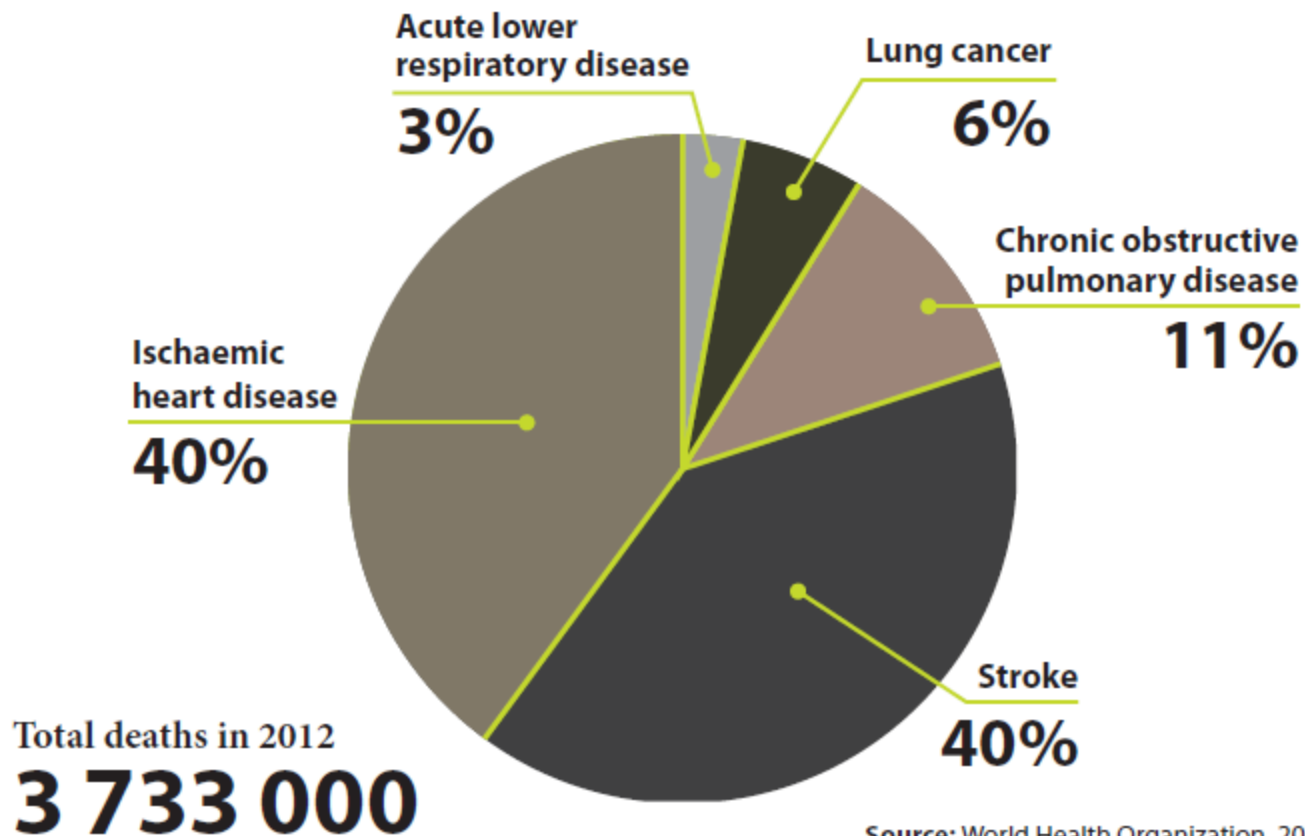
Zdroje znečištění ovzduší a dopady

Figure 4: Air pollution sources and impacts



Úmrtí spojená se znečištěním ovzduší

Figure 5: Deaths attributable to ambient air pollution



Source: World Health Organization, 2014

Počet obyvatel žijících v regionech s překročeným limitem BaP

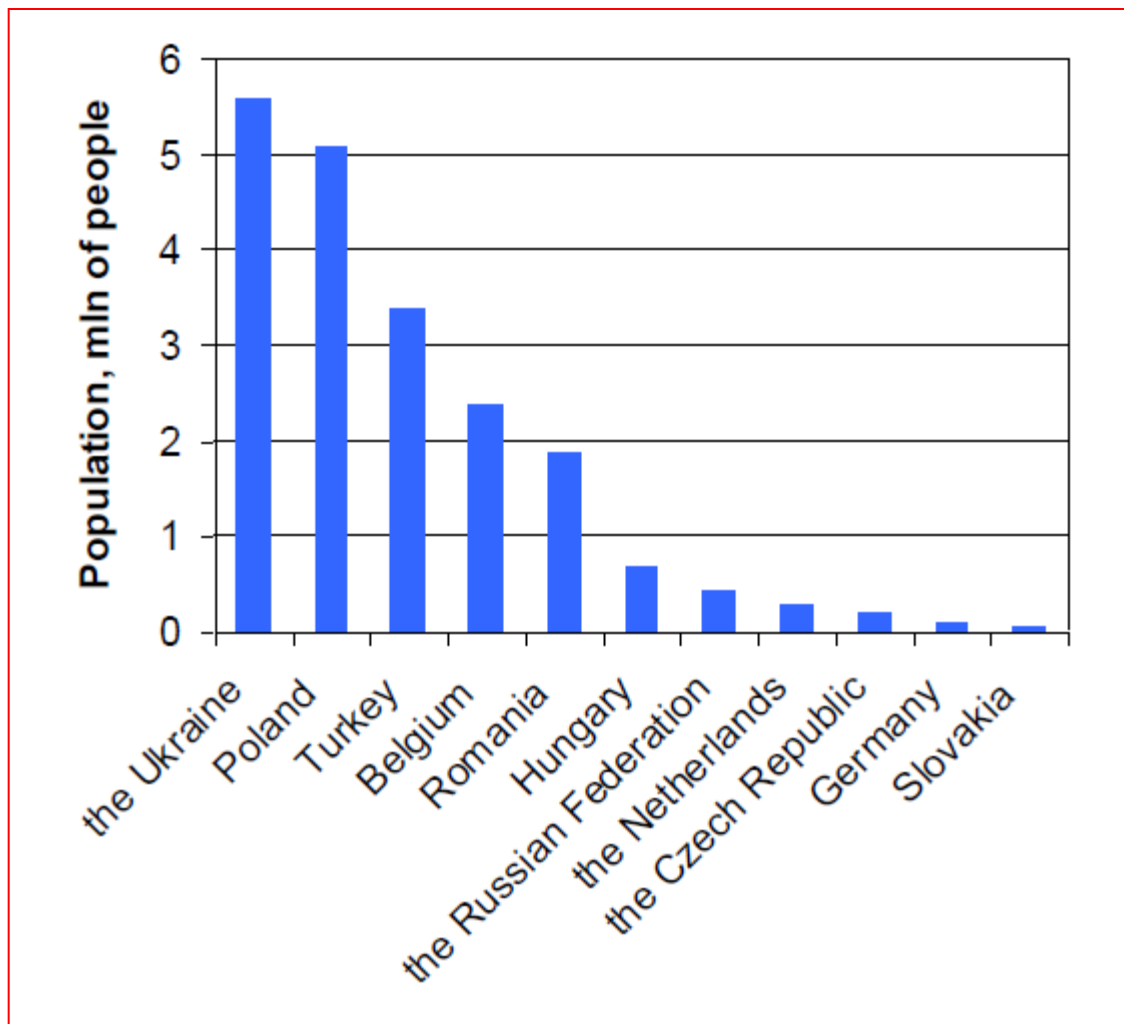
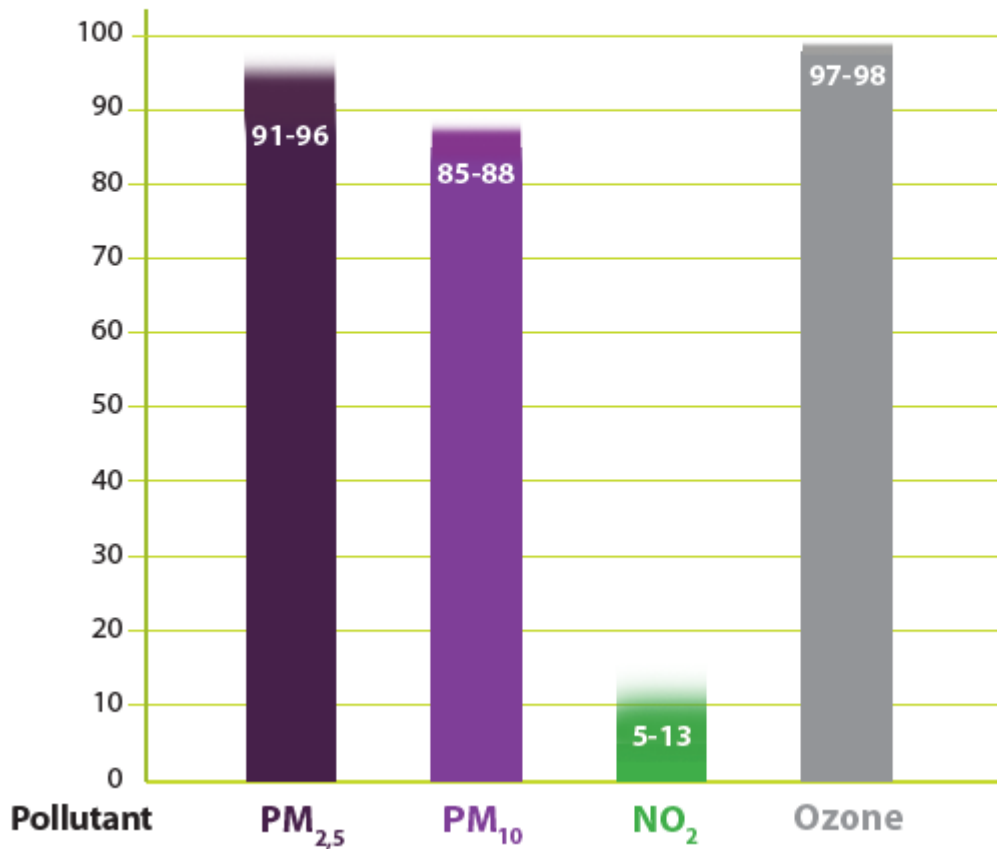


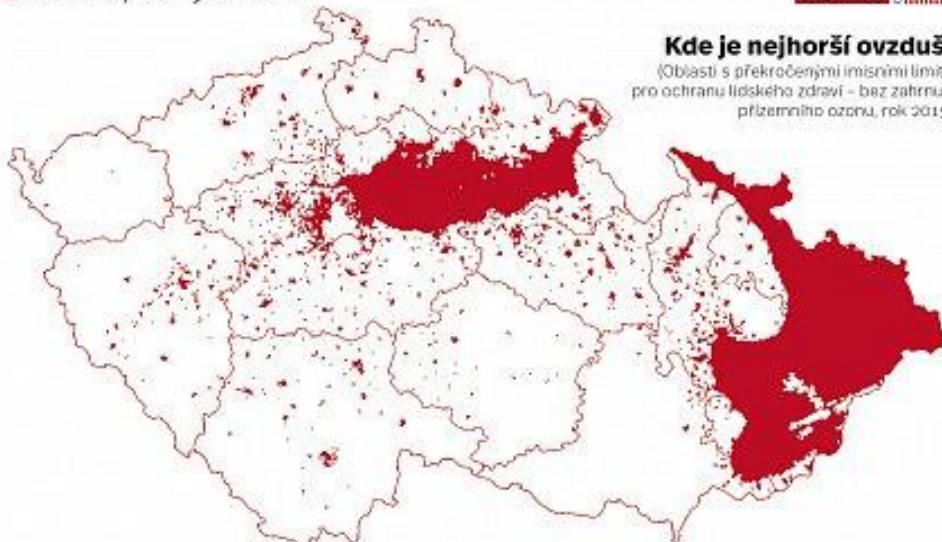
Figure 4.14: Number of people living in regions where B[a]P air concentrations exceed EU target value of 1 ng/m³ in EMEP countries in 2012 according to modelling results.

Procenta překročení WHO limitů

Figure 6: Percentage of the urban population in the EU exposed to air pollutant concentrations above WHO reference levels

Exposure above reference levels estimate (%)





Kde je nejhorší ovzduší

(Oblasti s překročenými emisními limity pro ochranu lidského zdraví – bez zahrnutí přízemního ozonu, rok 2015)

Kolik lidí umře navíc

(Navyšení celkové roční úmrtnosti o „předčasná úmrtí“ kvůli PM10)

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
6528	3678	3192	3498	4515	6417	5521	5253	5184	4800

Kde je to letos nejnebezpečnější

(Počet překročení emisních limitů u jemného prachu, 2016)



Co páchne nejvíc

(Zdroje emisí PM10 v ČR, v %, 2014)



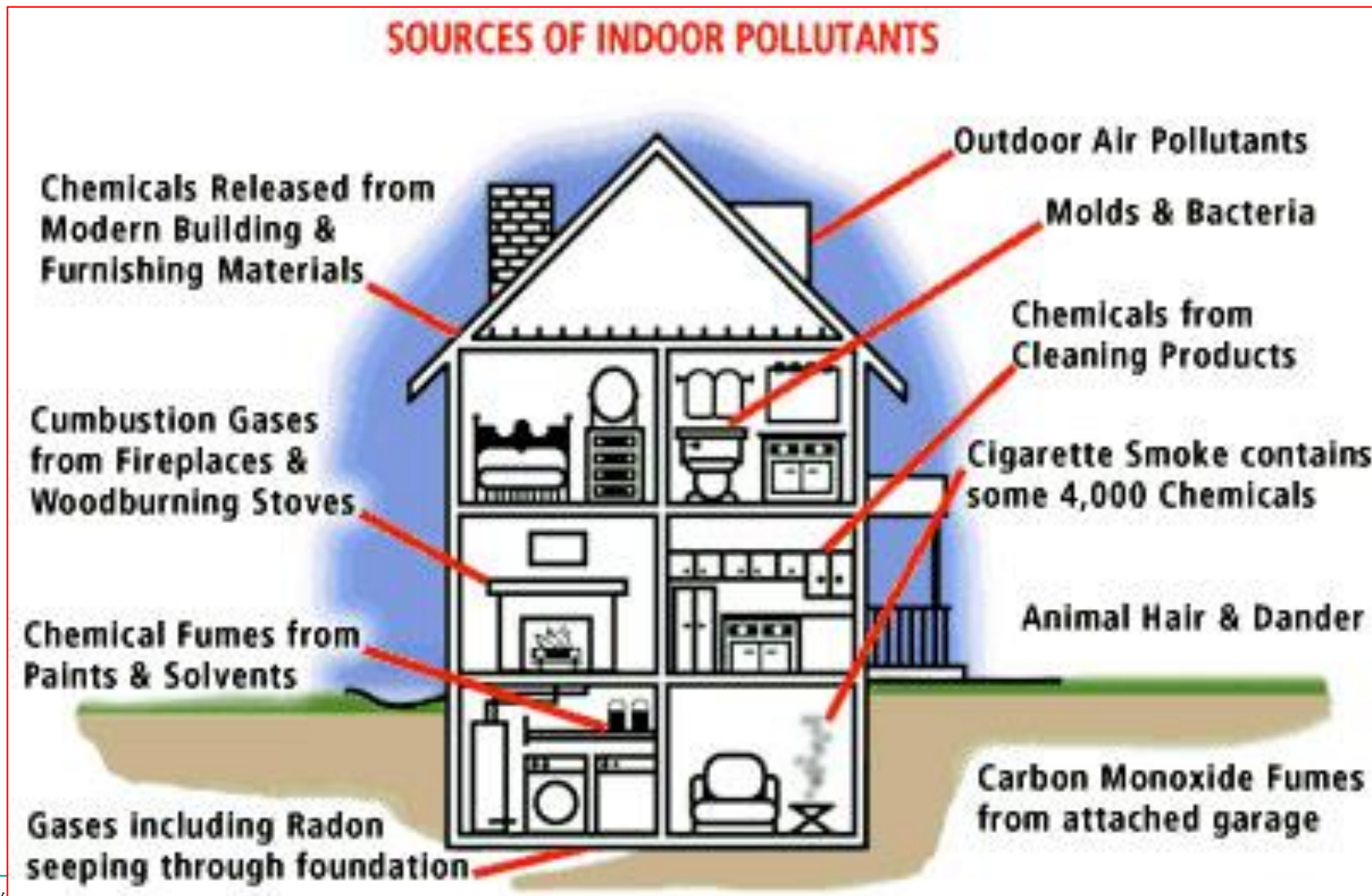
35 je povolený počet překročení

Kolik lidí umírá v Evropě

(Úmrtnost na znečištěném ovzduší, na 100 tisíc obyvatel, rok 2012, vybrané země)



Vnitřní prostředí



Research Centre for Toxic Compounds in the Environment

<http://recetox.muni.cz>