World Health Organization

THE PUBLIC HEALTH IMPACT OF CHEMICALS: KNOWNS AND UNKNOWNS

Data addendum for 2019

This is an addendum to the WHO publication "The Public Health Impact of Chemicals: Knowns and Unknowns" (WHO, 2016). Data presented in this update refer to the year 2019 while the initial publication presented data for 2012 (WHO, 2016) and the first data update presented data for 2016 (WHO, 2018)

Table 1: Overview of the disease burden preventable through sound management and reduction of chemicals in the environment (2019)[a]

Chemicals/ Groups of chemicals	Disease outcomes considered (population attributable fraction of DALYs)	Deaths	DALYs	Method
Chemicals in acute poisonings				
Chemicals involved in unintentional acute poisonings (methanol, diethylene glycol, kerosene, pesticides etc.)	Unintentional poisonings (73%)	61,523	3,489,814	Expert survey/ qualitative evidence synthesis
Chemicals involved in unintentional occupational poisonings (already included in the above poisonings)	Unintentional poisonings (occupational) (9.8%)	8,608	470,082	CRA
Pesticides involved in self-inflicted injuries	Self-inflicted injuries (20%)	137,831	6,245,500	Limited epidemiological data
Chemicals involved in congenital anomalies	Congenital anomalies (5.0%)	26,643	2,589,832	Expert survey/ qualitative evidence synthesis
Single chemicals with mostly longer term effects				
Lead	Cardiovascular diseases (CVD) (4.6%); chronic kidney diseases (CKD) (3.0%); idiopathic intellectual disability (IID) (30%)	901,716 (CVD: 848,778, CKD: 52,938)	21,676,385 (CVD: 17,734,898, CKD: 1,225,202, IID: 2,716,285)	CRA
Chemicals in occupational exposures (longer term effects)				
Occupational carcinogens (arsenic, asbestos, benzene, beryllium, cadmium, chromium, diesel engine exhaust, formaldehyde, nickel, silica, sulphuric acid, trichloroethylene)[b]	Cancers (2.9%); pneumoconiosis (79%)	350,325 (cancers: 333,867; pneumoconiosis: 16,458)	7,691,763 (cancers: 6,964,775, pneumoconiosis: 726,988)	CRA
Occupational particulates (dusts, fumes, gas)	COPD (16%); pneumoconiosis (21%)	524,290 (COPD: 517,734, pneumoconiosis: 6,556)	11,788,178 (COPD: 11,596,089, pneumoconiosis: 192,089)	CRA
Total	Considered diseases: poisonings, self-inflicted injuries, congenital anomalies, cardiovascular diseases, chronic kidney diseases, idiopathic intellectual disability, cancers, pneumoconiosis, COPD	2,002,328 (3.6% of total deaths)	53,481,472 (2.1% of total DALYs)	

Data sources: CRA: IHME (2021), disease statistics: WHO (2021a and 2021b); "expert survey" and "limited epidemiological data": Prüss-Ustün et al. (2016).
[a] without counting the effect of chemicals in general ambient air pollution, [b] excludes second-hand tobacco smoke.
Notes: DALYs: disability-adjusted life years, CRA: comparative risk assessment, COPD: chronic obstructive pulmonary disease, CVD: cardiovascular diseases, CKD: chronic kidney diseases, IID: idiopathic intellectual disability.

Figure 1. Total deaths attributable to chemicals by disease (includes risks assessed in Table 1, data for 2019)

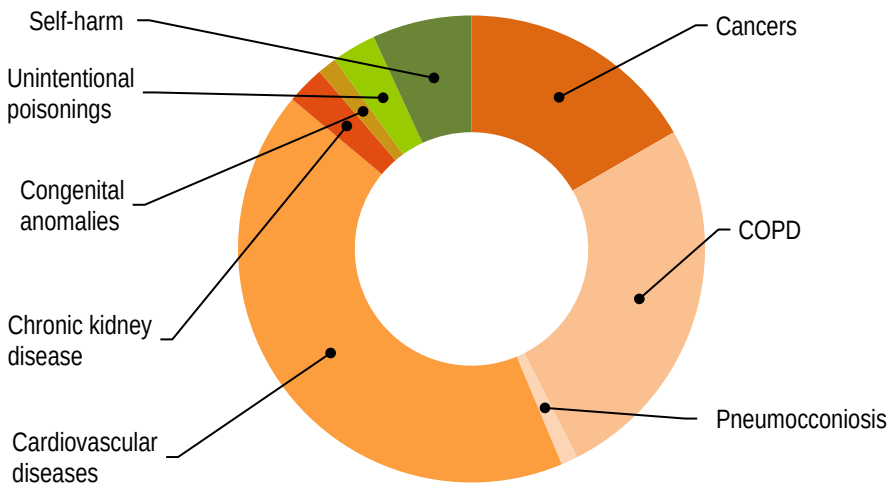


Figure 2. Deaths attributable to chemicals, by sex (2019)

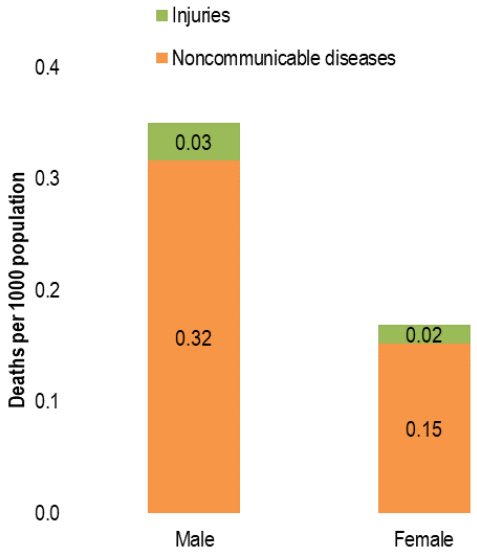


Figure 3. Percentage of global deaths attributable to poisonings by age (2019)
Children and young adults are particularly affected by unintentional poisonings.

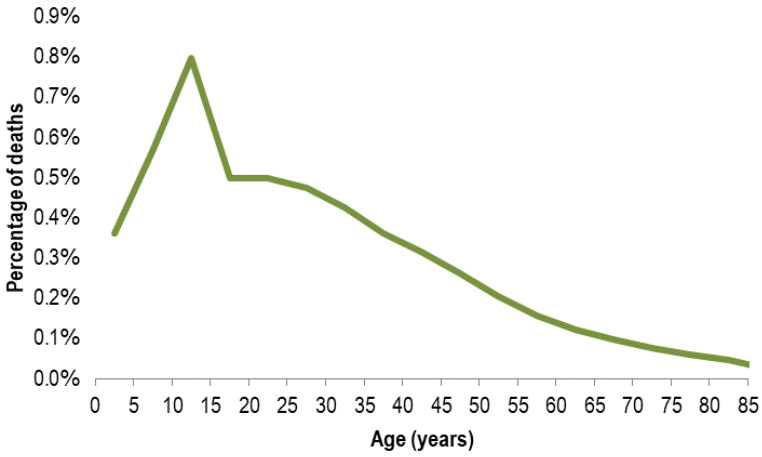


Figure 4. Poison centres (January 2021)
A poison centre is a specialized unit that advises on, and assists with, the prevention, diagnosis and management of poisoning. Only 47% of countries have a poison centre, with partucular gaps in the African and Eastern Mediterranean regions and in the small island states in the Western Pacific Region.

Figure 5. International Health Regulations core capacities implementation status: chemical events (2020)
Parties to the International Health Regulations (IHR, 2005) are required to have or to develop minimum core public health capacities to detect, assess and report public health events, including chemical accidents and emergencies. In 2020, the State Party self-reported global average core capacity score for chemical events was lowest among all 13 IHR (2005) core capacities.

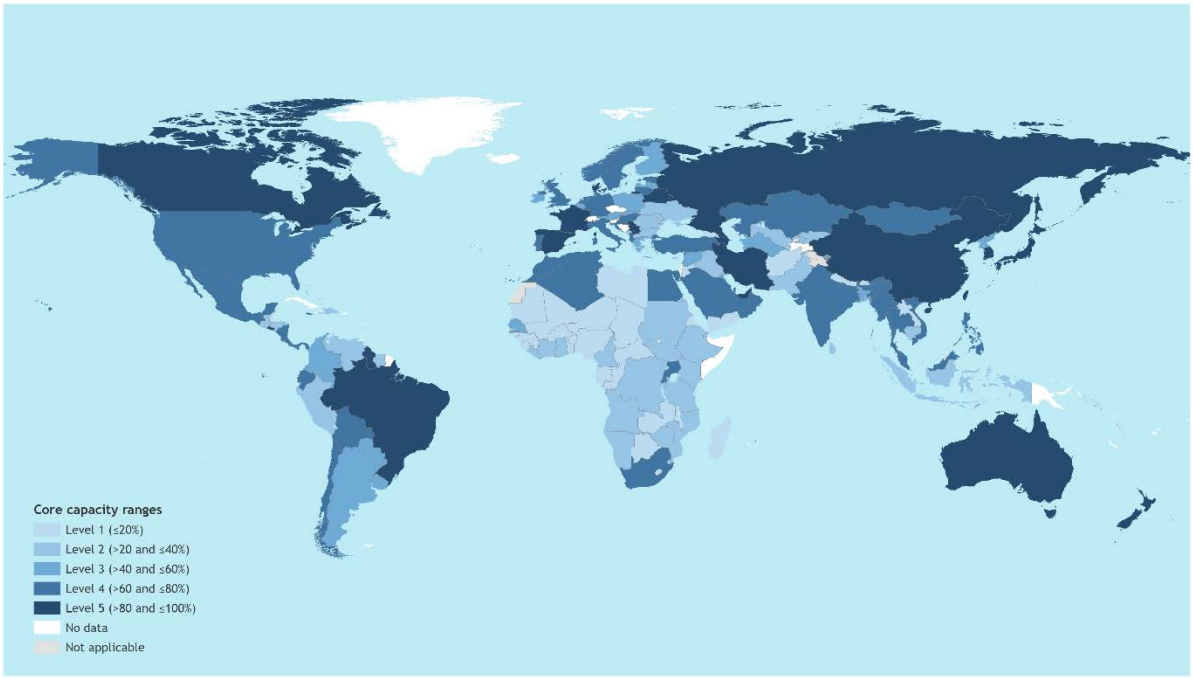
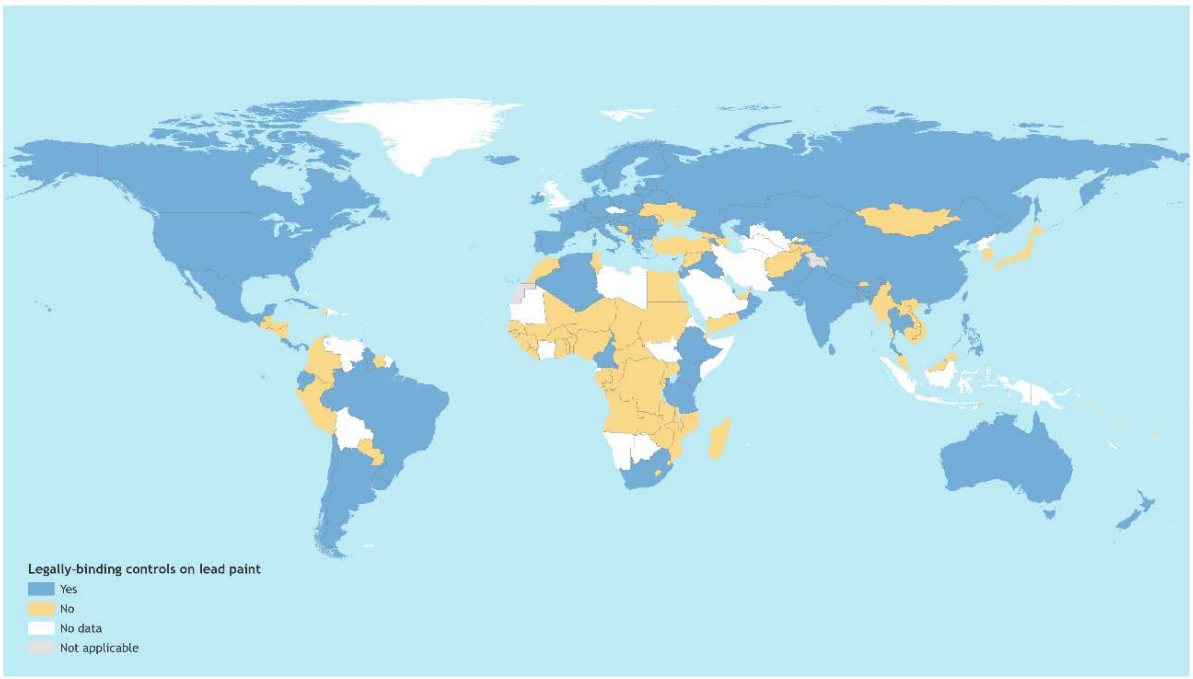


Figure 6. Countries with legally binding controls on lead paint, based on information from governments, December 2020

As of 31 December 2020, only 41% of countries have confirmed that they have legally binding controls on the production, import, sale and use of lead paints



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