



Chemical safety within the European Environment and Health Process

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24.06.2021

Outline

- Chemicals Universe
- Burden for health of unsound chemicals management
- Policy background
- Priorities in chemicals safety in the WHO European Region (Ostrava and Parma Declarations)
- Current activities:
 - national policy and legislation
 - human biomonitoring
 - chemical risk assessment
 - contaminated sites and circular economy
 - chemical emergencies
 - health sector role

Chemicals universe



Economy growth



Food security



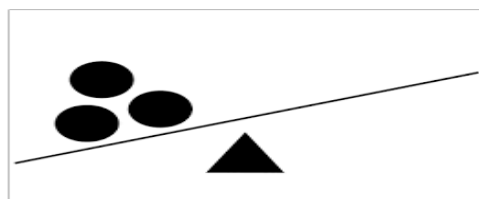
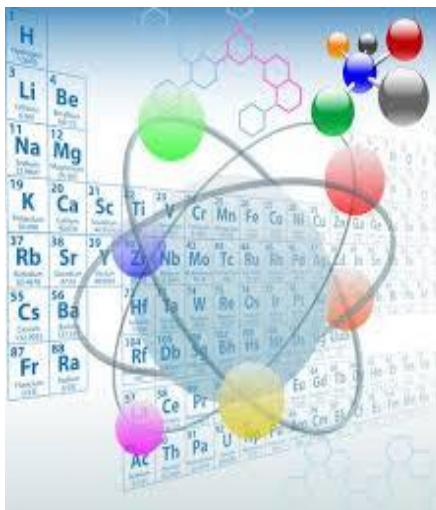
Households



Health



Etc....



Sustainable development

Contamination

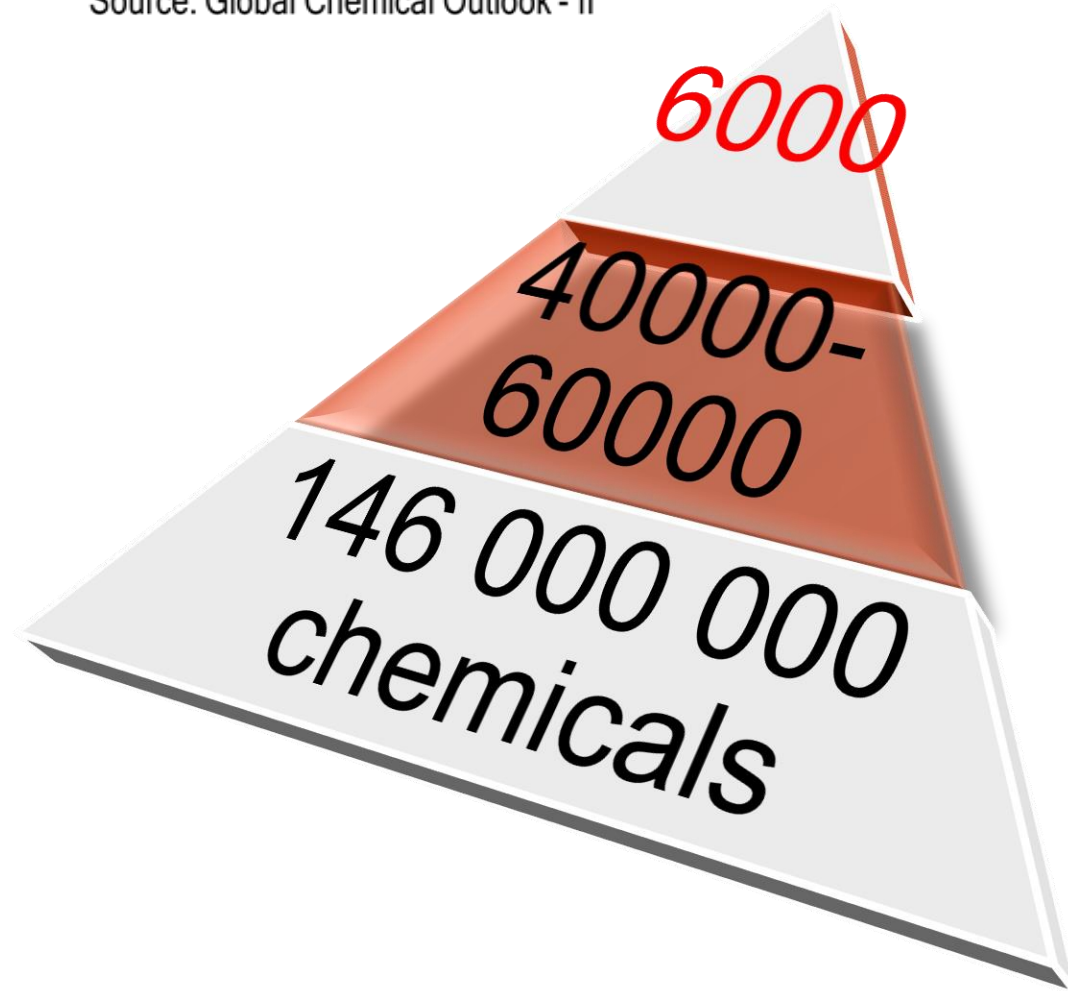


Diseases and ill-health



Chemicals universe and human health

Source: Global Chemical Outlook - II

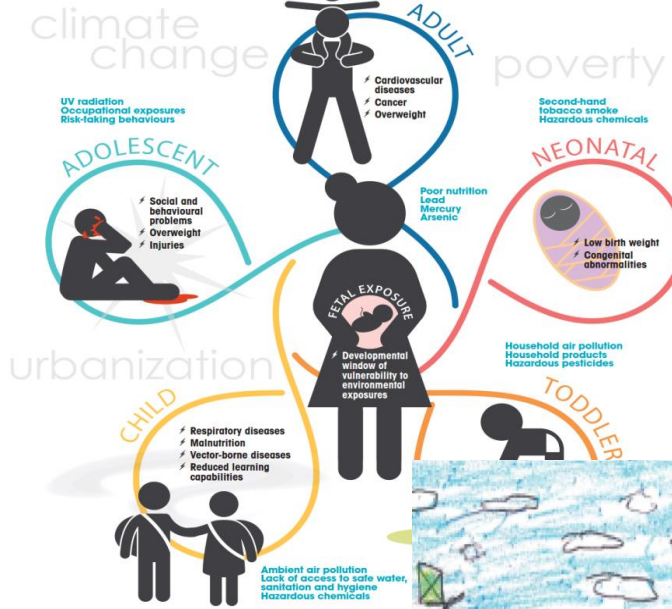


Health hazards

- Acute toxicity information (inhalation, ingestion, via skin)
- Eye damage / irritation information.
- Sensitizing effects
- Mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Selective toxicity to target organs and (or) systems (single and repeated exposure)
- Aspiration toxicity.
- Other specific consequences of negative effects, including on the endocrine system, blood system, etc.

A life in health: The effects of environmental hazards

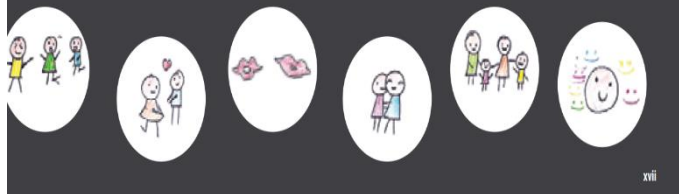
Children are exposed to a variety of hazards from the environments in which they live, learn, work and play. Children are especially vulnerable to these exposures because of their developing systems and behaviours. Environmental exposures in early life can have immediate effects or build over time to increase disease risk later in life. Exposure starts early - in the womb, and can have effects throughout life.



Reducing environmental risks could
childhood deaths and



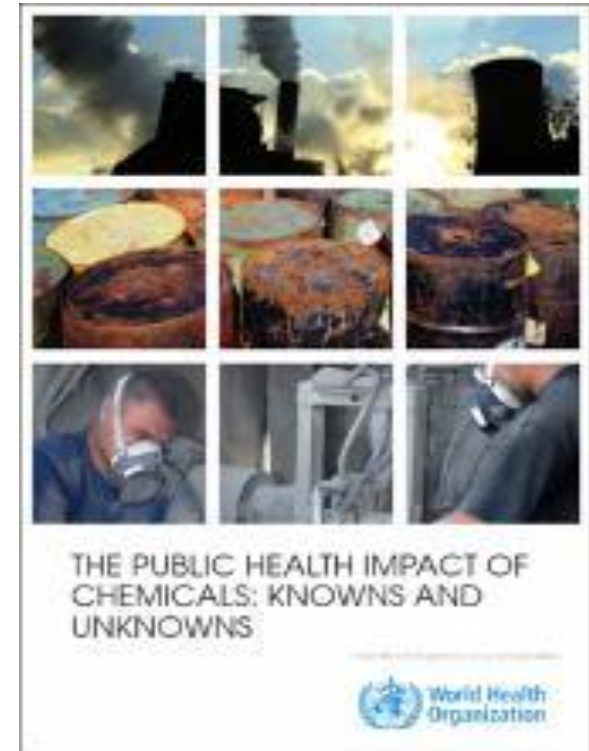
Don't
pollute
my future



Burden of diseases

1.6 million lives and 45 million disability-adjusted life-years were lost in 2016/2018 due to exposure to selected chemicals:

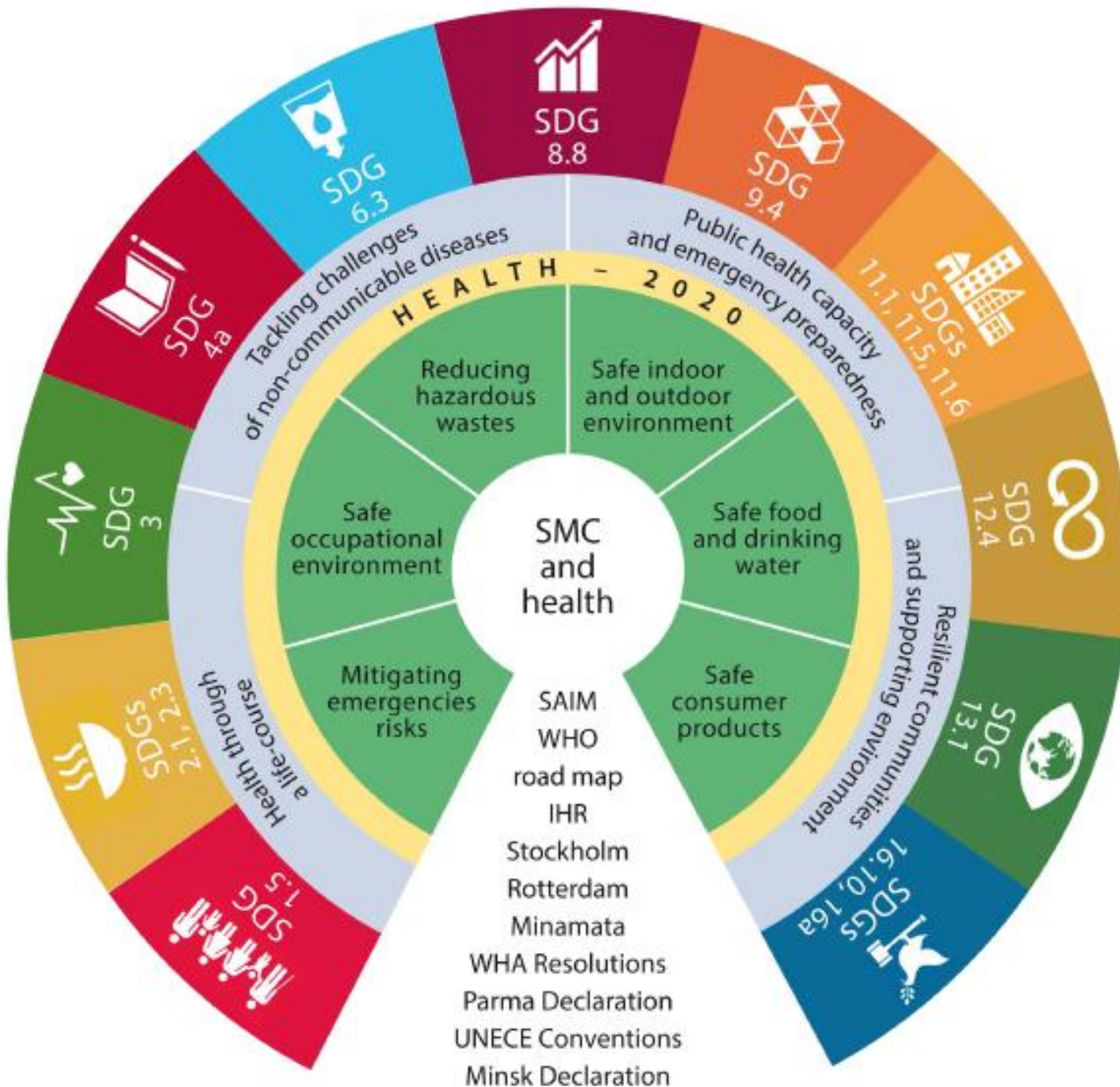
- methanol, diethylene glycol, kerosene, pesticides (acute poisonings),
- chemicals involved in occupational poisonings,
- lead
- occupational carcinogens
- chemicals involved in congenital abnormalities
- pesticides involved in self-inflicted injuries



WHO (2016) The Public Health Impact of Chemicals: Knowns and Unknowns

<https://www.who.int/publications/i/item/WHO-FWC-PHE-EPE-16.01-eng>

Global and Regional policies



**WHO Regional Office for Europe (2017).
Fact sheet on the SDGs: Hazardous
chemicals**

<https://www.euro.who.int/en/health-topics/environment-and-health/chemical-safety/data-and-statistics/fact-sheet-on-the-sdgs-hazardous-chemicals-2017>

European Environment and Health Process

DECLARATION OF THE SIXTH MINISTERIAL CONFERENCE ON ENVIRONMENT AND HEALTH

**minimizing of adverse effects of chemicals
on human health and the environment**

improving indoor and outdoor air quality for all

**building environmentally sustainability of health systems and
reducing their environmental impacts**

**preventing and eliminating the adverse effects related to waste
management and contaminated sites**



Ensure synergy and active participation in the implementation of the Strategic Approach to International Chemicals Management (SAICM), including its health strategy, the WHO road map to enhance the health sector's engagement in the SAICM towards the 2020 goal and beyond, and relevant multilateral legally binding agreements.

Ostrava Declaration – EHP priorities

- **STRATEGIC APPROACH TO INTERNATIONAL CHEMICALS MANAGEMENT**
- **WHO CHEMICAL ROAD MAP**

Parma Declaration on environment and health

Commitment to Act

.Protecting children's health Regional priority goal 4: Preventing diseases arising from chemical, biological and physical environments

- Taking advantage of the approach and provisions **of international agreements (SAICM!)**
- Protecting each child from exposure to harmful chemicals; **identify and eliminate risks** till 2015
- Developing national programmes for eliminating **of asbestos-related diseases** (2015)
- More research **on EDCs** and other chemicals of concern; developing and using health risks methods

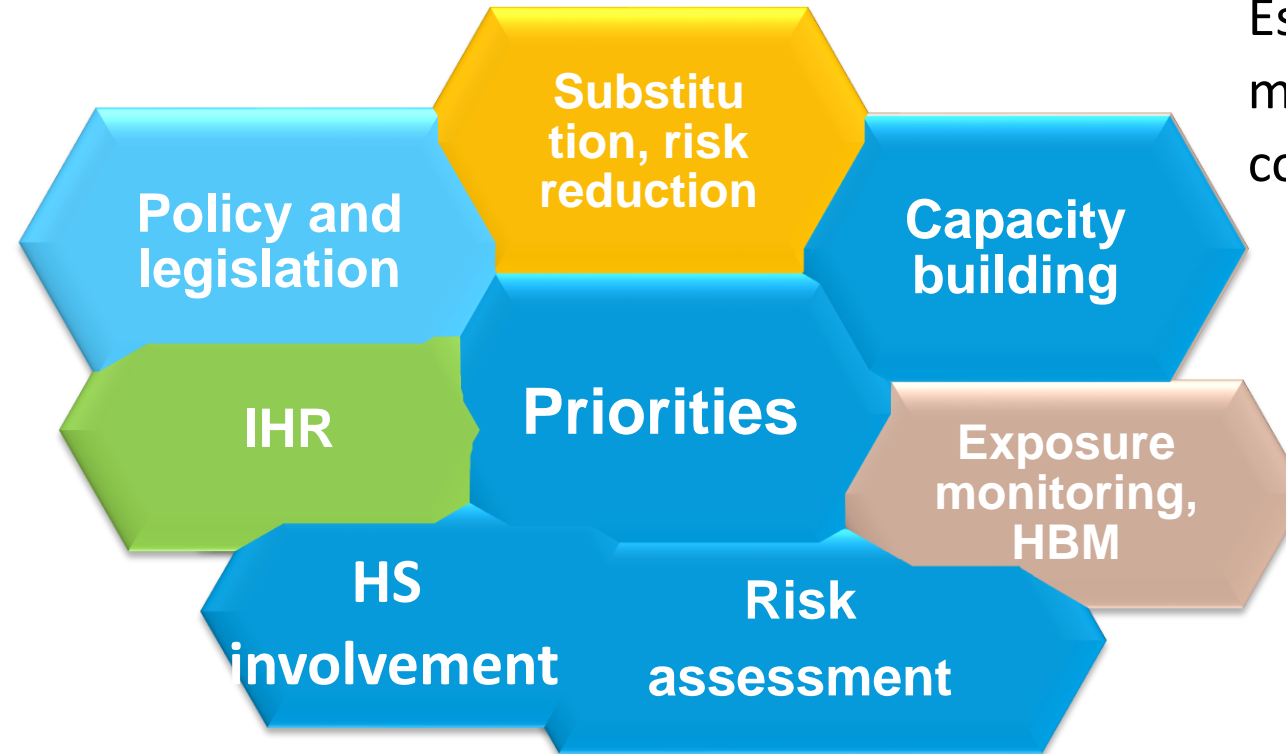
Ostrava Declaration – priorities of the EHP

Support development of advanced policies and legislation – a core regional priority in health sector

Ensure capacities to prevent and respond to acute events and strengthen PCC

Facilitate implementation of international agreements

Encourage substitutions



Establish multisectoral mechanisms to coordinate actions

Reduce exposure through life cycle, especially of vulnerable groups

Promote HBM

Promote risk assessment, improve understanding of burden of diseases

Supporting development of national policies and advanced legislation

Support of development of national policy and legislation

ESTABLISHMENT OF KEY ELEMENTS OF SOUND CHEMICALS MANAGEMENT SYSTEMS IN SELECTED COUNTRIES IN EASTERN EUROPE, CAUCASUS AND CENTRAL ASIA (2018-2021)



СОЗДАНИЕ СИСТЕМЫ РАЦИОНАЛЬНОГО РЕГУЛИРОВАНИЯ ХИМИЧЕСКИХ ВЕЩЕСТВ В БЕЛАРУСИ



ქიმიური ნივთიერებების მდგრადი მართვის ეროვნული სისტემის ძირითადი ელემენტების დანერგვა აღმოსავლეთ ევროპის, კავკასიის და ცენტრალური აზიის ზოგიერთი ქვეყნებში



КАЗАХСТАНДА ХИМИЯЛЫК ЗАТТАРДЫ УТЫМДЫ БАСКАРУ БОЙЫНША ДДСУ ЖОБАСЫ

CAPACITY BUILDING

National assessment of existing chemical management practice

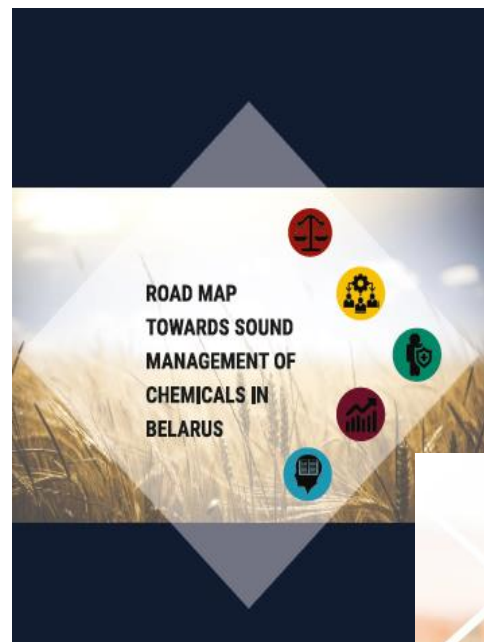
Development of country-focussed road maps

Establishment of Helpdesks to support governmental authorities and industry

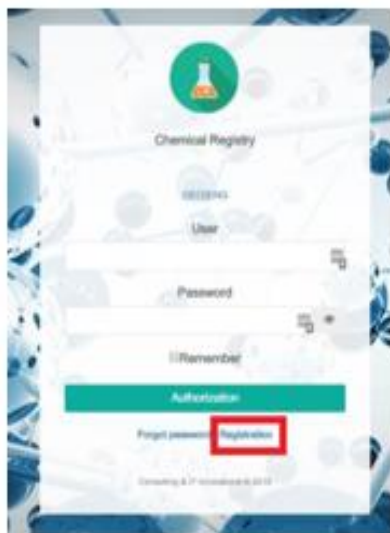
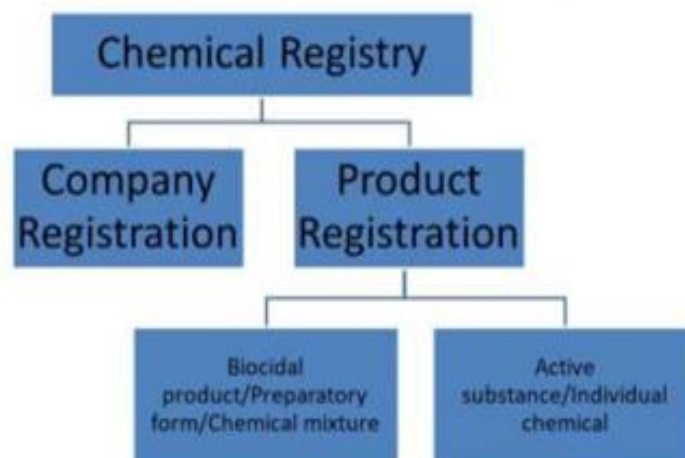
Advancement of national legislation to ensure sound chemicals management

Development and testing of a software for on-line registering of chemicals

Support of development of national policies and legislation



Chemical Registry Electronic System



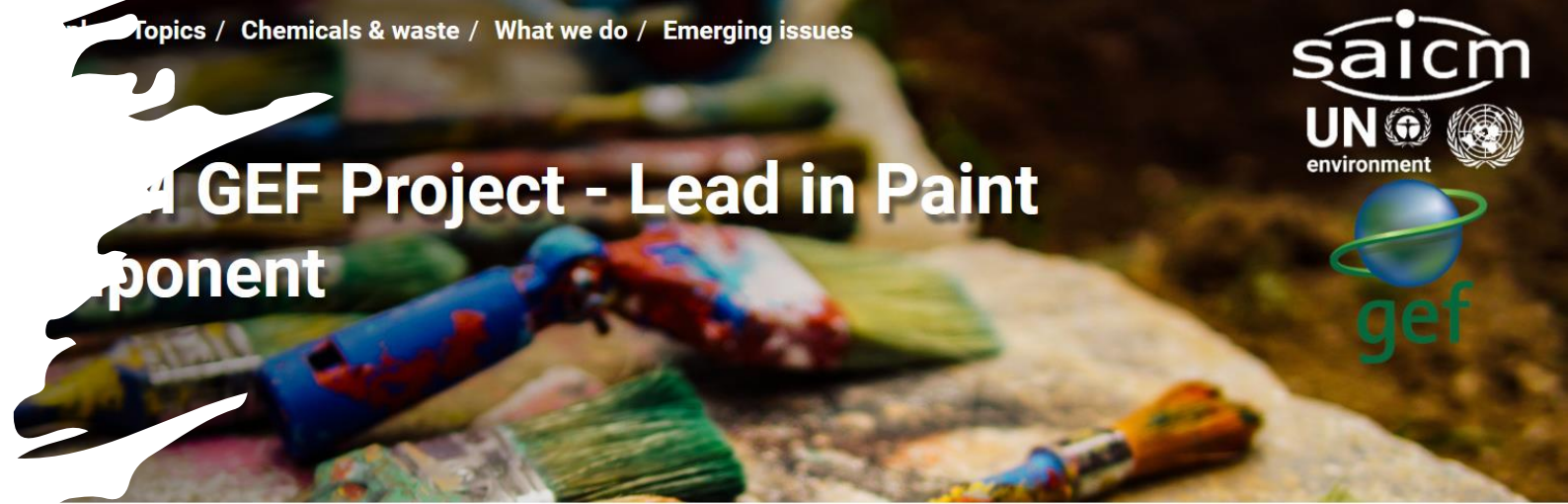
Policy – health sector involvement



11-12 February 2020,
Minsk, Belarus

Substitutions – lead in paints (support national legislation)

7 more countries
included 90ppm limit in
the national legislation

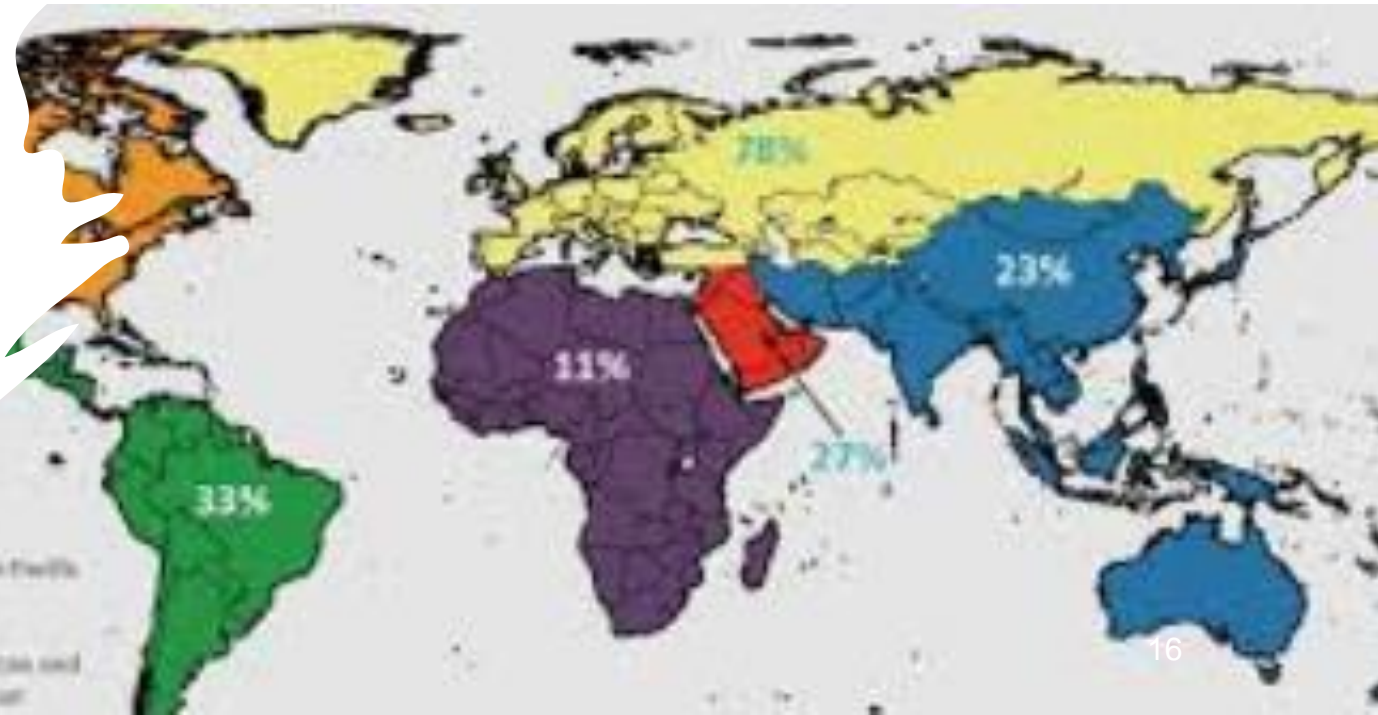


Regulatory and voluntary action by government
to phase out lead in paint

In Chemicals & waste

Why do chemicals and waste
matter?

What we do



Substitutions – mercury-containing devices

GEF project: 2017 –2022- 2026

Component 1: Development and implementation of national health-system wide strategies for phasing out the import, export and manufacture of mercury thermometers and

Component 2: Implementation of national strategies to phase out manufacture, import and export in all project countries, and demonstrations of a phase out in use

Component 3: Knowledge management

Component 4: Project results are available nationally and shared with other countries participating in this project, and globally

Albania



Montenegro

Human biomonitoring

HBM: why it is so important

- Assessment of population and (individual) exposure and health risks
- Accumulation of scientific knowledge and promotion of research
- Identification of population at risks
- Promotion of policy decisions and monitor their effectiveness
- Social-economic impact of policy actions
- Prioritization of chemicals of public health concern
- Identification of countries requiring an urgent support (comparable data)
- Diagnosis of poisonings (acute and chronic)
- Therapy (justification of clinical measures to reduce body burden in critical cases)



Promotion of policy decisions and monitor their effectiveness



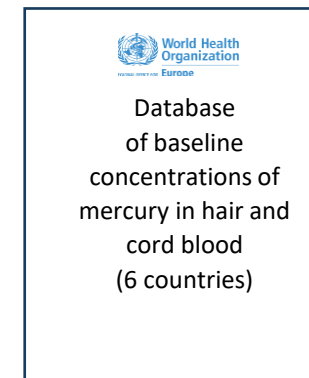
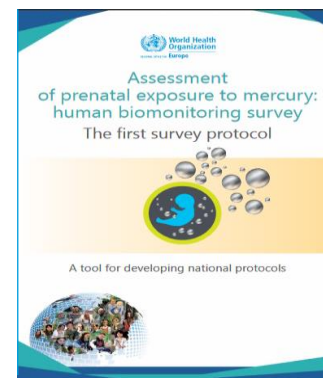
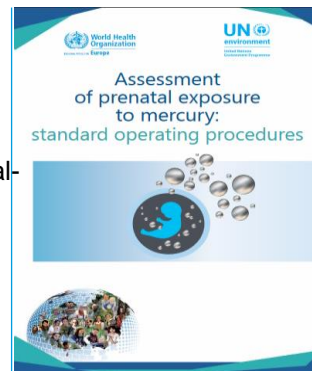
A: Minamata Convention Article 1: (Objective) Protecting human health and the environment **		Source of information on indicator	Baseline for the indicator
A1. Cross-cutting monitoring indicator	Levels of mercury in the environment and in humans due to anthropogenic emissions and releases	- Integrated modelling	Baseline amount in the first evaluation (if models are available)

Health aspects, Information exchange, public information and education, research, effectiveness evaluation

Articles 16, 17, 18, 19, 22

<https://apps.who.int/iris/handle/10665/332161>

<https://www.euro.who.int/en/health-topics/environment-and-health/chemical-safety/publications/2018/assessment-of-prenatal-exposure-to-mercury-human-biomonitoring-survey-2018>



Key lessons learnt:

- In addition to the methodological support (SOPs and Protocols), training of national coordinators, field staff and laboratory workers is critical
- Harmonized health-based reference guidelines are needed for risk assessment and communication, including to individuals

Priorities, needs and challenges of promoting HBM

- Filling gaps in scientific knowledge
- Promoting policy decision on HBM as an instrument for decision making
- Strengthening of involvement of the health sector
- Quantifying health risk based on HBM results
- Applicability of HBM in public health
- Linking HBM results with health outcomes
- Development of health-based reference values (harmonized globally)
- Standardised protocols for chemicals of concern
- Risk communication
- Availability of resources, human, technical and financial, particularly in developing countries
- Interpretation of HBM results in terms of sources of exposure

Harmonized approach

Benefits

Comparable and reliable data

Knowledge about populations at risks at global and national level

Effective use of human, technical and financial resources

Evaluation of risk reduction measures geographically and temporally

Challenges

Cultural differences

Ethical considerations

Readiness (laboratory capacity and competence)

Possibility to incorporate in existing national programmes

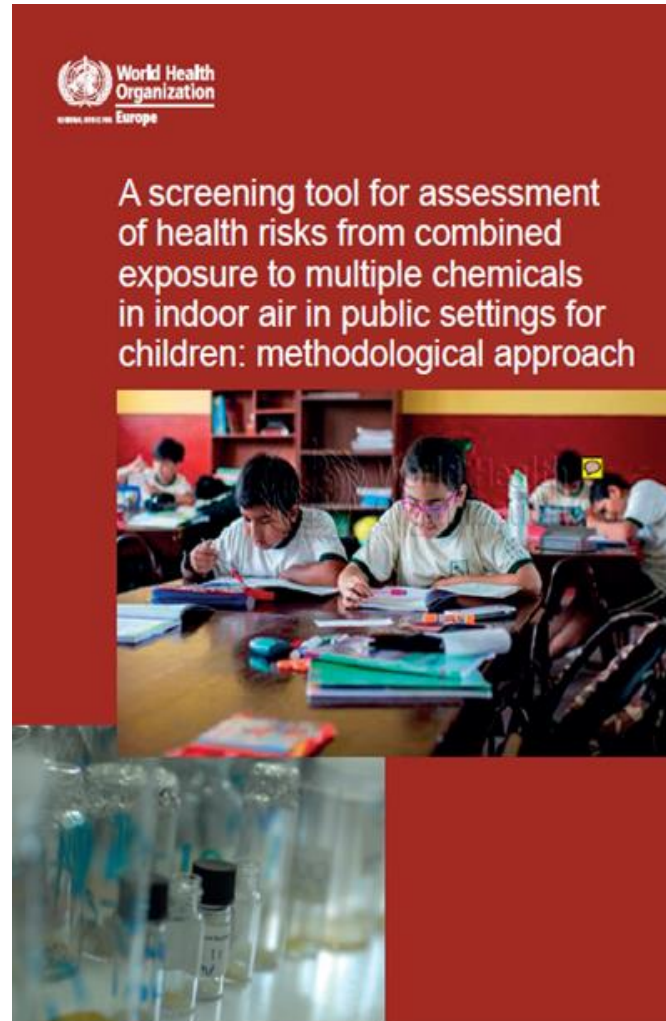
Chemical risk assessment

Risk assessment of combined exposure to multiple chemicals

- Screening tool for assessment of health risks from combined exposure to multiple chemicals in indoor air in public settings for children: methodological approach

<https://apps.who.int/iris/handle/10665/341708>

- Software IAQRiskCalculator



The screenshot shows the web interface of the IAQRiskCalculator. At the top, there is a navigation menu with "File", "Dashboard", "WHO database", and "Help". Below this is a secondary menu with icons for "New calculation", "Saved calculation", "Chemical family", "Chemical substance", "Source of information", "Reference value", and "Point of departure". The main content area has a "Welcome" header and a sub-header "Welcome to the IAQRiskCalculator". Below this, there is a section "Start new calculation or populate your database" with five expandable menu items: "What is the IAQRiskCalculator?", "How it works", "How the tool was developed", "Acknowledgements", and "Getting started". At the bottom, there is a list of actions with corresponding buttons and information icons: "Start calculation", "Add new chemical substance", "Add new reference value", "Add new point of departure", "View WHO database of reference values", and "View WHO database of points of departure".

Methods for sampling and analysis of chemical pollutants in indoor air

Supplementary publication to the screening tool for assessment of health risks from combined exposure to multiple chemicals in indoor air



Literature review on chemical pollutants in indoor air in public settings for children and overview of their health effects

with a focus on schools, kindergartens and day-care centres



Supplementary publication to the screening tool for assessment of health risks from combined exposure to multiple chemicals in indoor air in public settings for children

Screening questionnaire for selection of sampling sites for assessment of risks from combined exposure to multiple chemicals in indoor air



Supplementary publication to the screening tool for assessment of health risks from combined exposure to multiple chemicals in indoor air in public settings for children

<https://apps.who.int/iris/handle/10665/334389>

<https://apps.who.int/iris/handle/10665/341467>

<https://extranet.who.int/iris/restricted/handle/10665/341466>

Supplementary documents

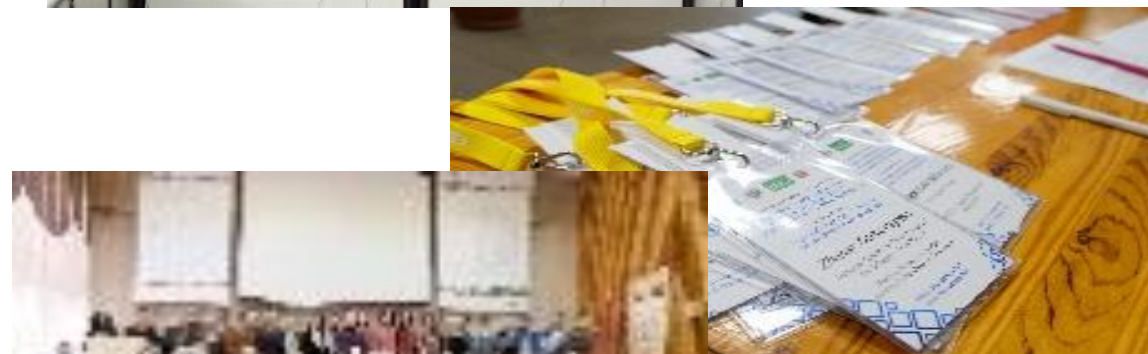
- Methods for sampling and analysis of chemical pollutants in indoor air
- Literature review on chemical pollutants in indoor air in public settings for children and overview of their health effects
- Screening questionnaire for selection of sampling sites
- Educational course on indoor air pollution and children health

Capacity building on RA

Approach – train – the trainers followed by national trainings

Topics covered in 2018-2020:

chemicals life cycles,
EU- chemical legislation the collection and sharing of information,
development of strategies and policies,
classification and labelling of chemicals,
health risk and impact assessments,
multiple exposures and risks, and
human biomonitoring.



**Around 200
national experts**

Chemical pollution of indoor air and its risk for children's health



Educational course

27

Mercury and human health



<https://apps.who.int/iris/handle/10665/341984>

**Capacity building:
supporting material**

- *RISK ASSESSMENT*
- *HUMAN BIOMONITORING*

Contaminated sites

Circular economy

Contaminated sites

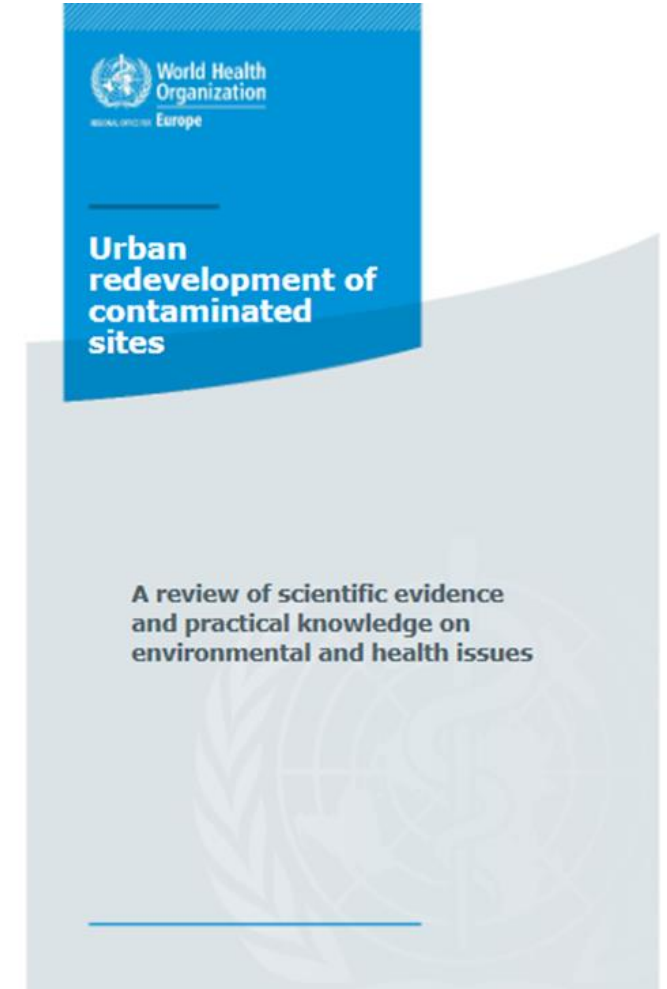
2.8 million sites with polluting activities (EU, 2016)

Evidence is strong that remediation methods such as soil removal, capping and/or replacing contaminated soil result in decreasing pollution and human exposure (HBM) (example of lead contamination)

- Health aspects beyond risk assessment (for example, mental impacts)
- Involvement across the planning, remediation and redevelopment
- Health surveillance measures to evaluate impacts
- Assessment of effectiveness – identification of HBM approaches and advise on the interpretation and implication of results

Annex 1

OVERVIEW OF EUROPEAN INITIATIVES AND NETWORKS PROVIDING
TECHNICAL INFORMATION ON CONTAMINATED SITE REMEDIATION AND
REDEVELOPMENT³



<https://apps.who.int/iris/bitstream/handle/10665/340944/WHO-EURO-2021-2187-41942-57585-eng.pdf>

Circular economy - the main concern

Circulation of hazardous chemicals

Increase of hazardous wastes

VS

re-use of hazardous chemicals

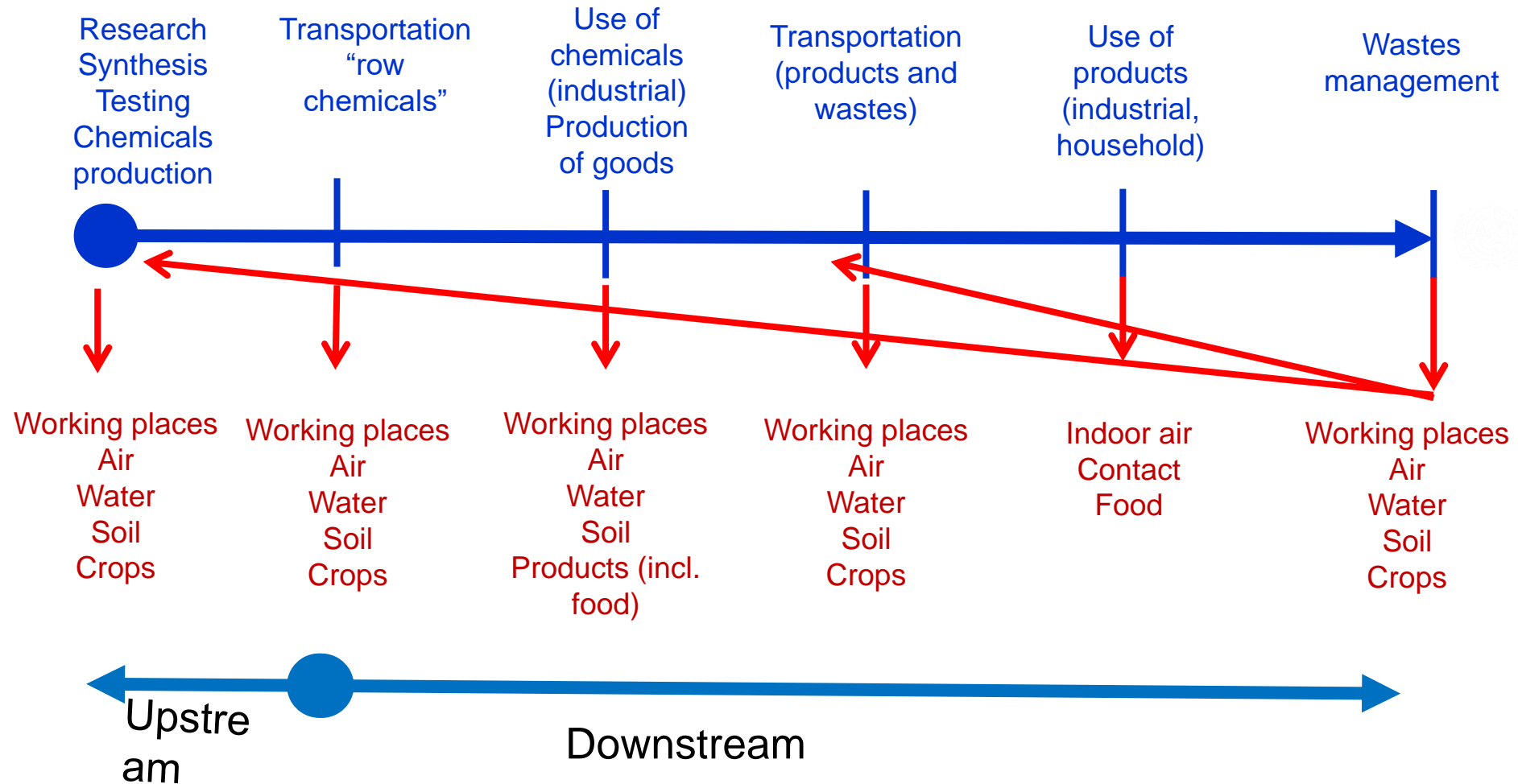
VS

promotion of safer alternatives



Chemicals life-cycle – risks for humans

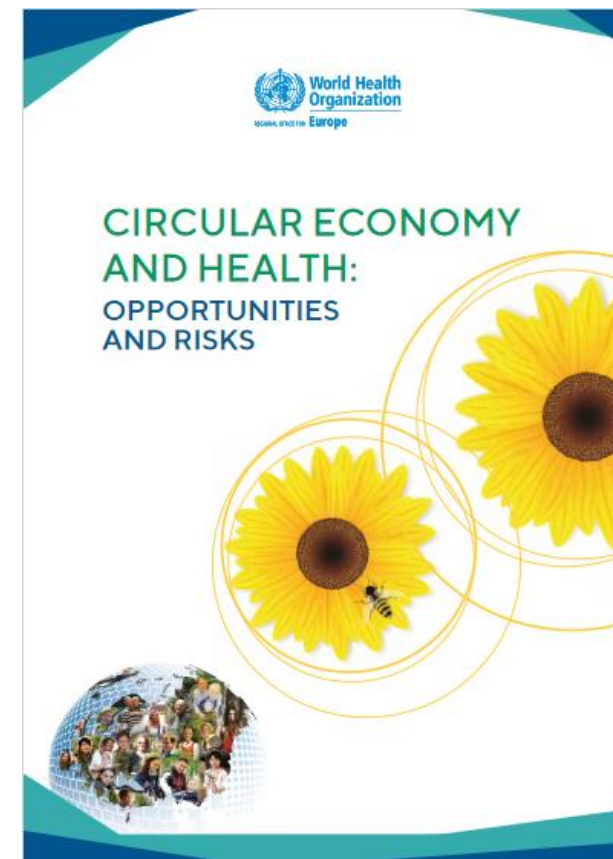
Safety of chemicals during a life-cycle



Circular economy



Integrating health and well-being in circular economy (HIA)



https://www.euro.who.int/__data/assets/pdf_file/0003/420348/Assessing-the-health-impacts-of-a-circular-economy.pdf



https://www.euro.who.int/__data/assets/pdf_file/0004/374917/Circular-Economy_EN_WHO_web_august-2018.pdf

Chemical emergencies

Chemical emergencies

Poison centres Role and resources


Monique MATHIEU, MD PhD
Lille University hospital
11-12 February 2020



Types of chemical emergencies and disaster life-cycle

Is health risk assessment the same?

What is the health sector role?



INTERNATIONAL HEALTH REGULATIONS (2005) THIRD EDITION



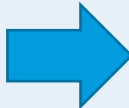
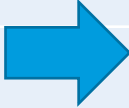
IHR (2005) MONITORING AND EVALUATION FRAMEWORK

JOINT EXTERNAL EVALUATION TOOL INTERNATIONAL HEALTH REGULATIONS (2005)

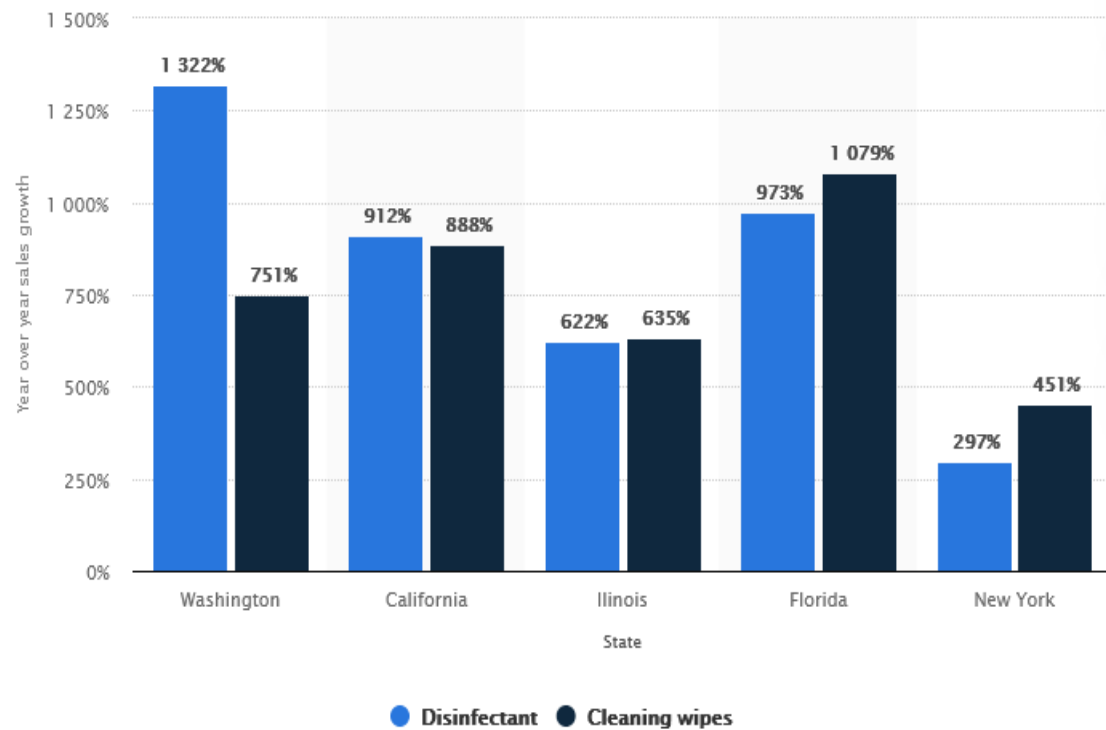
Rapid Risk Assessment of Acute Public Health Events



COVID-19: Chemical safety aspects

Sharply increased demand for disinfectants, hand sanitisers, cleaning products		Marketing decisions to respond the needs
Increased demand for pharmaceuticals		Interruptions in supply chain
Increased demand for PPE and medical products		Speeding up the supply of disinfectants Incompliance of products (20 countries reported incompliance of hand sanitizers) Lockdown leading to decrease of chemical production
Dramatic increase of use of disinfectants and cleaning products in hospitals and households		Predicted increase of exposure to chemicals
Fear of an unknown disease, treatment protocols in development, wish to protect yourself		Excessive and uncontrolled consumption and use of chemicals leading to poisonings, allergies, dermal problems, toxic effects of treatment, etc.
Lack of medical service		
Rapid start-up of installations after a lockdown		Chemical incidents

Increased demand of disinfectants



© Statista 2021

[Show source](#)

[Additional Information](#)

Production of disinfectants

Thousand tonnes of active ingredient weight

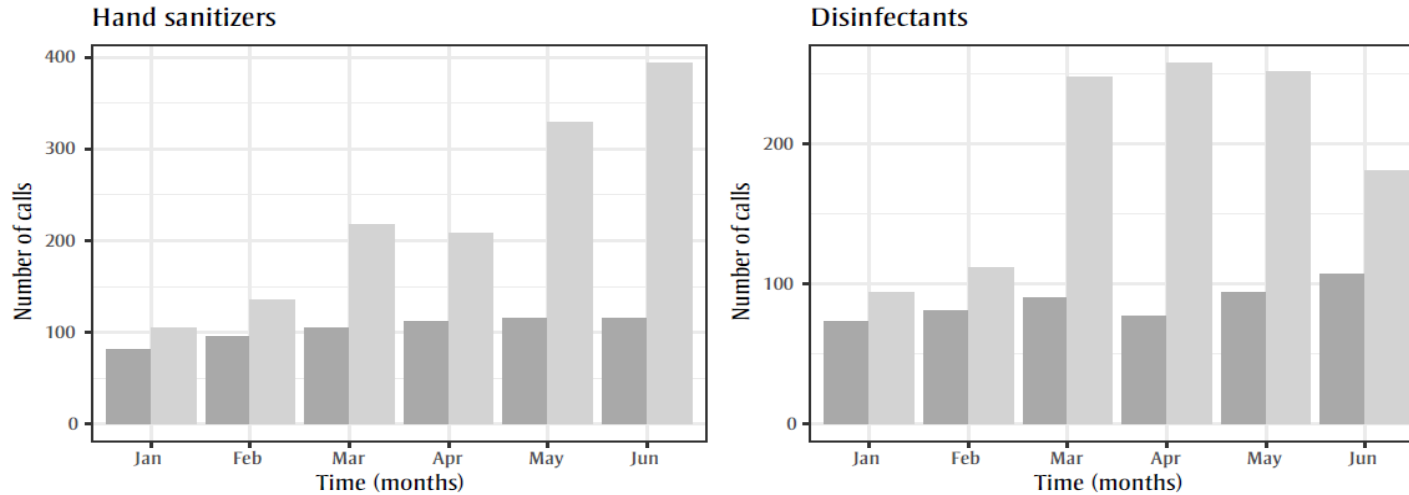


German companies produced 80% more disinfectant in the first nine months of the year 2020

Source: destat

Information from poison control centres

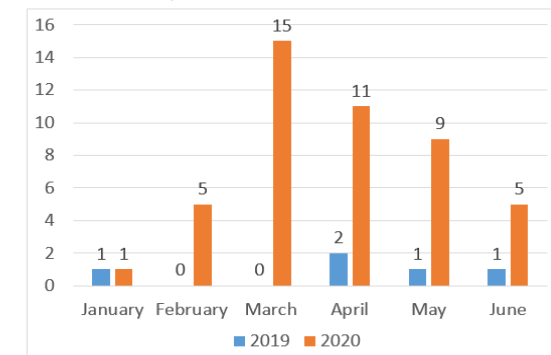
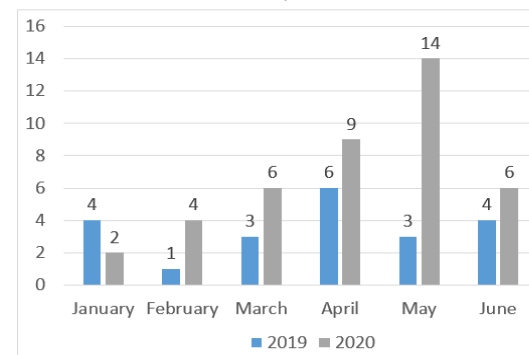
Figure 1. Number of calls made to Canadian poison centres regarding selected cleaning products and disinfectants in 2019 and 2020 (January to June), with year-over-year percentage changes



Source: Public Health Canada
<https://doi.org/10.24095/hpcdp.41.1.03>
(Published September 23, 2020)

Increase in monthly number of cases related to disinfectants and hand sanitizers during COVID-19

Source: Željka Babić, Poison Control Centre, Croatia;



Chemical emergencies

Explosion at a plastics factory, Ottaviano, Italy, 5th May 2020

An explosion at a plastics factory near Naples, Italy killed one person and injured two others on May 5. Local media reported that the blast could be heard from several kilometres away, while witnesses reported seeing a large plume of black smoke rising from the factory premises. The explosion occurred in the vicinity of the process ovens, destroying buildings and burying one of the employees in the rubble. The employee was freed, but died almost immediately of his injuries. The local population was recommended to close doors and windows and to avoid any unnecessary movement of people, particularly in the area close to the site. The factory had only reopened on May 4th after the Italian government eased the lockdown in the country following the coronavirus pandemic.

Source: EC JRC



Health sector role

Health-sector and chemicals management

<https://www.who.int/publications/i/item/WHO-FWC-PHE-EPE-17.03>



... to be informed and to research, publish and disseminate knowledge.



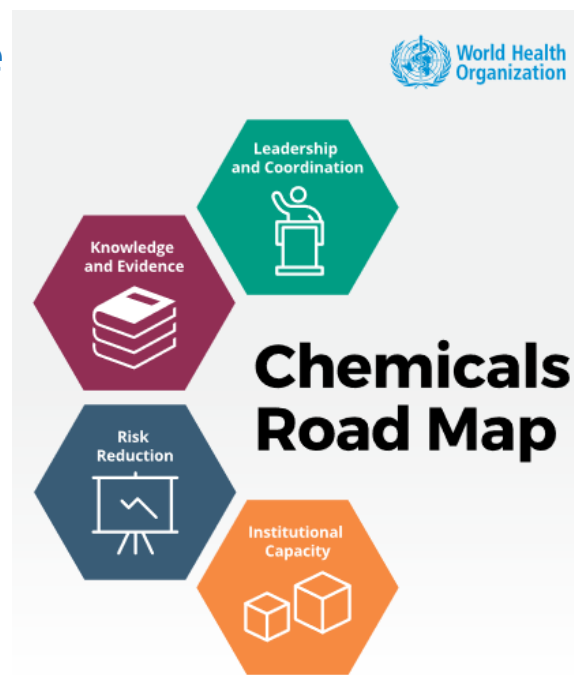
... to recognize exposures and related health conditions.



... to educate colleagues, students, families and communities.



... to raise awareness and advocate for risk-reduction solutions and to policy- and decision-makers.



Road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond





HEALTHY HEALTH CARE SETTINGS

MS Provide guidance for health care settings to promote and facilitate the use of safer alternatives and sound management of health care waste, drawing on relevant guidance from WHO and others, such as that adopted under multilateral environmental agreements.

MS Develop and implement awareness campaigns for health care workers about chemicals of concern and established best practices for safe chemicals management within the health sector.

The use of chemicals is widespread in health-care:

- - cleaning agents
- - disinfecting and sterilizing agents
- - laboratory chemicals
- - medical gases
- - anesthetic agents
- - cytotoxic drugs and pharmaceutical substances.
- - chemicals in products (mercury, polyvinylchloride...)

Minamata Convention: health-related articles

