



Gender, chemicals and the health sector

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Key points

- Chemicals used in health care services are hazardous: reproductive, carcinogenic, neurotoxic with impacts on women and men
 - Women represent 69 – 74% of health professionals and para-professionals
- Protecting health applying hierarchy of control measures
- COVID-19 – chemical management issues
- Tools and resources

Chemical Hazards in health care

Occupational exposures

- Chemotherapeutic and hazardous drugs: carcinogens, mutagens, reproductive hazards (spontaneous abortion) and immuno-suppressor
- **Waste anesthetic gases: reproductive hazard and potent greenhouse gas**
- **Disinfecting and Sterilizing Agents (cleaners and nurses affected)**
 - Glutaraldehyde: sensitizer
 - Ethylene Oxide (EtO): carcinogen
- Pesticides
- Latex Allergy

Community exposures

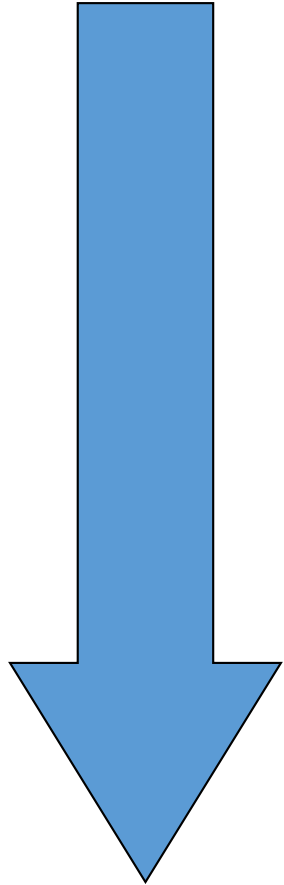
- **Dioxins and furans from medical waste incineration: endocrine disruption, carcinogen**
- Mercury: neurotoxin affects developing fetus as well as children and adults
- Ethylene oxide industrial use: community cancer clusters
- PVC/DEHP

References:

Stockholm County Council. Phase out list for chemicals hazardous to the environment and human health. https://www.sll.se/globalassets/6.-om-landstinget/hallbarhet/miljo/utfasningslista-kemikalier/phaseout_list_chemicals_web_eng.pdfhttps://www.sll.se/globalassets/6.-om-landstinget/hallbarhet/miljo/utfasningslista-kemikalier/phaseout_list_chemicals_web_eng.pdf,
US CDC National Institute for Occupational Safety and Health (NIOSH). State of the Sector | Healthcare and Social Assistance Identification of Research Opportunities for the Next Decade of NORA <https://www.cdc.gov/niosh/docs/2009-139/pdfs/2009-139.pdf?id=10.26616/NIOSH-PUB2009139>

Hierarchy of Controls

In Order From Most to Least Effective



- Elimination (soap & water; avoid waxing floors to avoid hazardous wax stripping chemicals; non-burn waste treatment technologies)
- Substitution: use the least toxic product that will be effective (alcohol hand rub, paracetic acid for glutaraldehyde, Intravenous vs inhaled anaesthetics, nitrile for latex gloves)
- Engineering Controls (ventilation, closed systems for instrument disinfection & anaesthetic gas administration, safer needle devices)
- Administrative and Work Practice Controls (pour chemicals to avoid aerosolization, dilute per recommendations, adequate staffing, no recapping of needles)
- Personal Protective Equipment (gloves, masks, gowns, etc)

Anaesthetic gas: a potent GHG and Reproductive hazard

- Health effects
 - Adverse reproductive outcomes: spontaneous abortion, congenital abnormalities
 - CNS effects: headache, nausea, fatigue, cognitive impairment
- Environmental impacts: 400 – 1000 x CO2 equivalent
- Control measures:
 - Minimize use of NO2 and flow rates
 - Eliminate desflurane
 - Substitute IV anaesthetic agents over inhaled gases
 - Closed administration systems to prevent exposures



<https://noharm-europe.org/articles/news/europe/anaesthetic-gases-fostering-low-carbon-healthcare-europe>

COVID-19 and the use of disinfectants

Proliferation of disinfecting tunnels without evidence of efficacy and with evidence of side effects (in the case of Ebola use)

WHO Environmental cleaning and laundry recommendations

<https://www.who.int/publications/i/item/WHO-2019-nCoV-IPC-WASH-2020.4>

Health Care Without Harm

<https://noharm-global.org/documents/coronavirus-update-disinfection-tunnels-factsheet>

Do not under any circumstance spray or introduce bleach or any other disinfectant into your body. These substances can be poisonous if ingested and cause irritation and damage to your skin and eyes.

Bleach and disinfectant should be used carefully to disinfect surfaces only.

Remember to keep chlorine (bleach) and other disinfectants out of the reach of children.

FACT: Spraying or introducing bleach or another disinfectant into your body WILL NOT protect you against COVID-19 and can be dangerous



World Health Organization #COVID19 #coronavirus

27 April 2020

Disinfectants and poisoning globally

April 2020: WHO poison centers report poisoning problems connected with COVID-19 in all continents.

Issues mentioned by poisons centres include:

- Ingestion of alcohol hand rub by children and confused elderly
- Mixing hypochlorite-based products with other cleaning products or chemicals, resulting in the generation of chlorine, and causing breathing difficulties.
- Ingestion of bleach in the belief that it will kill the virus.
- Intentional ingestion of corrosive disinfectants for self-harm
- Increase in cases of deliberate self-poisoning particularly in the elderly age group.
- People failing to attend hospital, or bring their children, for poisonings that need hospital management.



<https://www.cdc.gov/mmwr/volumes/69/wr/mm6916e1.htm>

PVC and DEHP

- PVC, the most widely used plastic in medical devices, has two key problems:
 - Dioxin, a human carcinogen, endocrine disruptor and persistent organic pollutant (POP) subject to the Stockholm Convention on POPs, can be formed during the manufacture, incineration or burning of PVC products.
 - DEHP, a phthalate used to soften PVC plastic, is linked to reproductive birth defects and other illnesses, according to animal studies.





Best Practices & Technologies for Reducing Healthcare Waste to Avoid Releases of Dioxins and Mercury



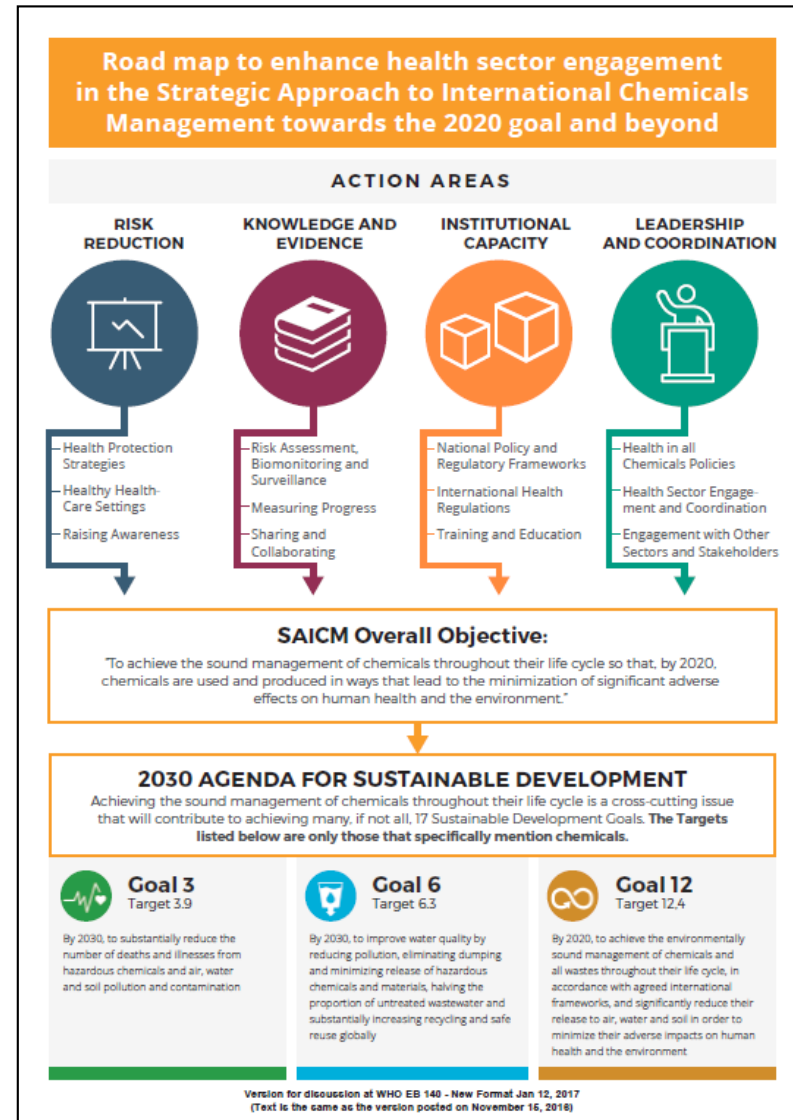
- Model Hospitals in 7 countries - GEF3 and 4 African countries in GEF5
 - Waste minimization, segregation, non-incineration treatment technologies



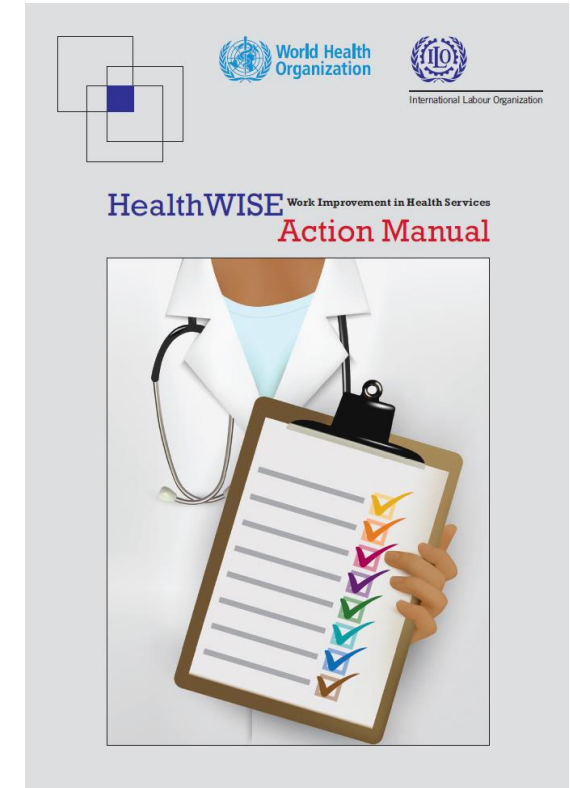
WHO Chemicals Road Map: to enhance health sector engagement in SAICM



<https://noharm-global.org/sites/default/files/documents-files/5548/Chemicals%20of%20Concern%20to%20Health%20and%20Environment.pdf>

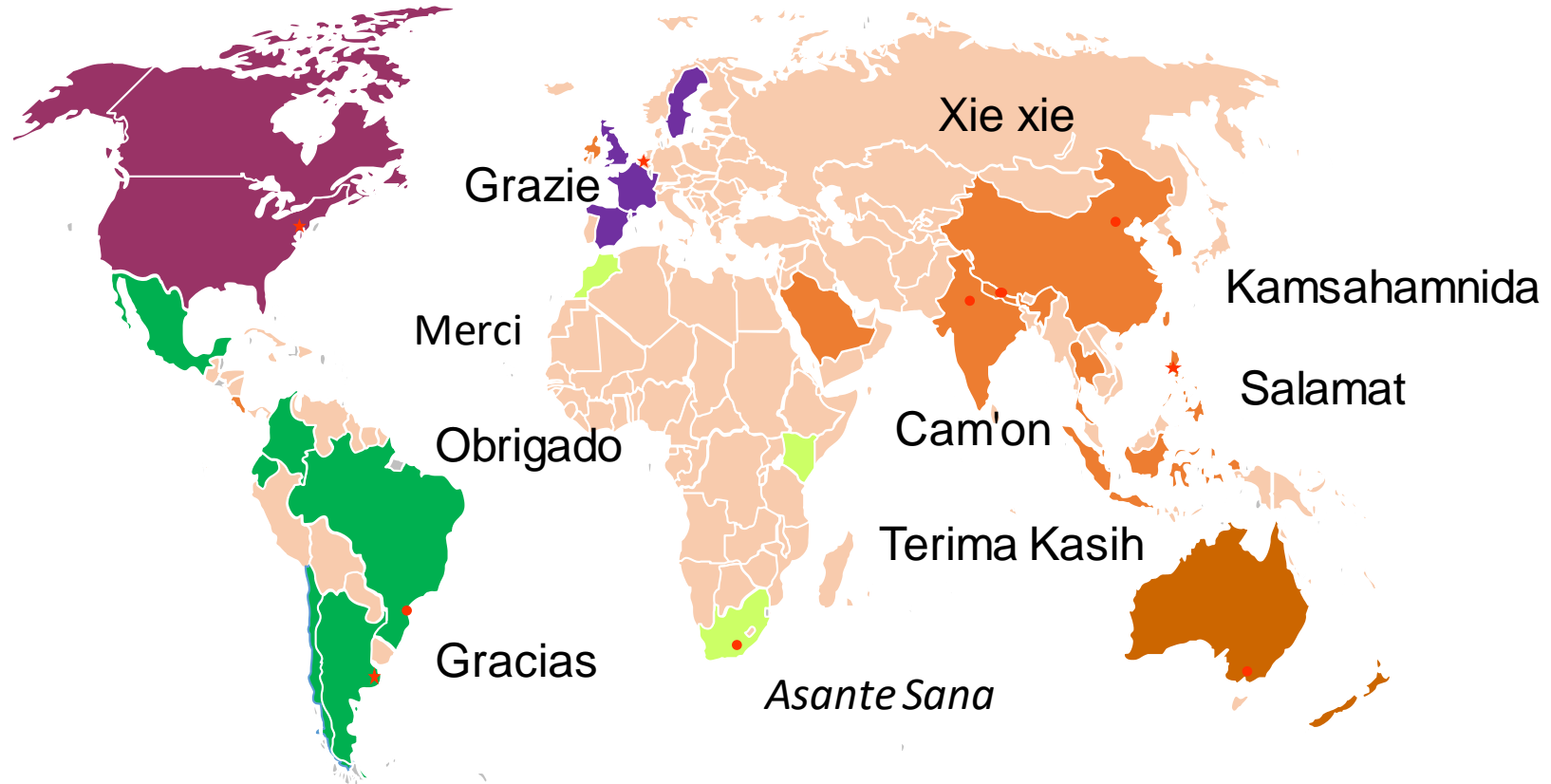


https://www.who.int/ipcs/saicm/ChemicalsRoadMapbrochure_en.pdf?ua=1



https://www.ilo.org/wcmsp5/groups/public/-ed_dialogue/---sector/documents/instructionalmaterial/wcms_237276.pdf

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