



At least one poison centre in each country

Summary for policy makers

A poison centre is a specialized unit advising on and assisting in the prevention, diagnosis and management of acute and chronic poisoning. Poison centres contribute to reducing the burden of diseases related to exposure to hazardous chemical agents in emergencies and in everyday life.

Why a poison centre should be established in each country

- 1 Poisonings are a matter of public health concern.
- 2 Human exposure to chemical agents is increasing, and additional preventive action is required.
- 3 Poison centres play a pivotal role in management of poisonings, detection and public health management of chemical emergencies, implementation of the International Health Regulations (2005) (IHR), sound management of chemicals and other specialized functions.¹
- 4 To achieve progress in implementation of global and regional chemical safety-related strategies, poison centres are crucial.
- 5 Poison centres add meaningful value to health-care systems – they actively save lives and reduce the costs of health care related to poisonings.

1 Poisonings are a matter of public health concern

The **negative health impacts** of poisonings are vast and varied, as illustrated by global health statistics.



In 2019, **0.5 million fatalities** were attributed to illicit drug use, and **18 million years of healthy life** were lost owing to drug use disorders (1).



In 2016, **106 683 deaths** and the loss of **6.3 million years of healthy life** were attributed to acute chemical poisoning (2).



Every year, **651 279 deaths** are caused by hazardous substances at workplaces (3).



Annually, **4.5–5.4 million people** are bitten by snakes; of these, **1.8–2.7 million** develop a clinical illness, and **81 410–137 800** die from snake bites (2).



Every year, **385 million** cases of unintentional, acute poisonings occur; 44% of farmers world-wide are affected by pesticides (4).

1 In some countries, poison centres mandate can include management of emergency situations with involvement of radioactive substances and materials and biological emergencies as well as diseases of unknown etiology.

2 Human exposure to chemical agents is increasing, and additional preventive actions are required.

The number and volume of industrial and agricultural chemicals, consumer products and pharmaceuticals are increasing every year.



Around **40 000–60 000 industrial chemicals** are used in commerce globally, of which about **6000** account for almost all the total volume (99%). It is projected that chemical production is set to triple by 2050. The number and volume of chemicals hazardous to human health will also increase accordingly (5).



Around **6000 drugs** are approved globally (2), and the market is expected to reach **US\$ 1.5 trillion** by 2023, at a growth rate of 4–5% (6).



Over **730 new psychoactive substances** have been reported to the European Union's early warning system (7).



Around **455 active pesticide ingredients** are approved in the EU (8), and over **1000 pesticides** are used around the world (9).



New household, personal care and cosmetics products are introduced on the market every year.



Around **2000 poisonous plant species** and **1200 species of poisonous and venomous animals** can harm human health (2).

3 Poison centres play a pivotal role in management of poisonings, detection and public health management of chemical emergencies, implementation of the IHR, sound management of chemicals and other specialized functions.

Roles and responsibilities to address toxic risks are shared across several institutions from different sectors and jurisdictions (Table 1). They include a strong focus on prevention.

The main function of the poison centre is to provide information 24 hours a day (to the public and/or health-care systems) related to poisonings and chemical agents (industrial and agricultural chemicals, natural toxins, pharmaceuticals, consumer products, household chemicals, forensic substances, substances of abuse, radioactive substances and materials).²

Poison centres include a strong focus on prevention. Effective poisoning prevention requires timely evidence and collaborative action. By integrating poison centre expertise and data into the broader health system, it is possible to inform enhanced and timely public health, regulatory and health security actions to address the management of toxic exposures. Given the global nature of poisonings and the international supply chain of chemicals, pharmaceuticals and consumer products, it is important to highlight the need for international collaboration to foster development of poison centres and establishing domestic and global toxicovigilance networks.

² Some poison centres also deal with poisonings of radioactive substances and materials.

Table 1. Role and functions of poison centres

Management of poisonings	Contribution to public health management of chemical emergencies and to IHR implementation	Contribution to sound chemicals management and prevention of noncommunicable diseases attributable to chemicals
<ul style="list-style-type: none">• Collection of information and creation of databases on poisonings and chemical agents• Data analysis to justify preventive policies• Diagnosis and treatment of poisonings, including development of clinical protocols• Teleconsultations and use of telemedicine techniques• Contribution to prevention of suicides with use of chemical agents	<ul style="list-style-type: none">• Contribution to all stages of the chemical emergency cycle: prevention, preparedness, detection and alerting, response and recovery• Timely detection and sharing of expertise/information, risk assessment and communication• Chemical surveillance and detection of new trends• Contribution to strategic planning, standard operating procedures and personal protective equipment• Identification of the necessary antidotes and medicinal products, and offering advice on their use• Ensuring core capacity and essentials for IHR implementation	<ul style="list-style-type: none">• Provision of real-world evidence and expertise on chemical impacts to inform regulations and policies• Creation and support of databases on chemical agents – pesticides, industrial chemicals, consumer products and other hazardous products• Classification and labelling of hazardous chemical agents (in line with the Globally Harmonized System of Classification and Labelling of Chemicals)• Creation and support of a database on chemical safety datasheets

Cross-cutting and specialized functions

- Training and other capacity-building activities
- Prevention of poisonings in chemical emergencies and in everyday life, including communication campaigns and providing information about options for preventive measures
- Detecting and alerting – toxicovigilancea and toxicosurveillance
- Provision of information about antidote availability, location, procurement and supply
- Provision of specific advice to vulnerable groups (such as pregnant women and children)

Notes: a Toxicovigilance comprises the detection and management of toxic exposure events of public health concern (2).

4 To achieve progress in implementation of global and regional chemical safety-related strategies, poison centres are crucial

Establishment and strengthening of poison centres contribute to achieving the Sustainable Development Goals (SDGs) and to implementation of other policies related to chemical emergencies and chemicals management.

- **SDG target 3.9** is “by 2030 substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination”.
- **SDG target 3.4** is “by 2030 reduce by one third premature mortality from noncommunicable diseases through prevention and treatment, and promote mental health and well-being”.
- The **IHR** self-assessment tool includes, as an indicator for chemical events, capabilities to detect, alert and respond to public health events caused by chemicals. The core capacities identified as necessary for countries to meet their IHR obligations include a poisons information centre and access to toxicology laboratory services (10).
- The **Strategic Approach to International Chemicals Management (SAICM)** and its new policy framework for chemicals management beyond 2020 note that poison centre implementation is a priority target in chemical safety (11).
- WHO’s **Chemicals road map**, approved by the Seventieth World Health Assembly, notes that establishment and strengthening of poison centres is a priority action for governments to reinforce the role of the health sector in reaching the goals of the SAICM (12).
- The compendium of possible actions to advance the implementation of the Ostrava Declaration on Environment and Health encourages countries to ensure capacities to prevent and respond to acute exposure to hazardous chemicals and products, including strengthening the role of poison control centres (13).

5 Poison centres add meaningful value to health-care systems – they actively save lives and reduce the costs of health care related to poisonings.

Fully functioning poison centres **benefit health-care systems**. They save resources as a result of reducing numbers of visits to emergency departments, reducing the length of stays in hospital beds (Box 2), and reducing mortality from poisoning by offering advice via phone calls. Their operation can also lead to reduced needs for transportation of patients and doctors via provision of effective clinical toxicology services using telemedicine. A poison centre is a prime example of telemedicine. Its activities can be very cost-effective.

Box 2. Poison centre consultations reducing hospital length of stay: examples

From 2010 to 2017, in Wisconsin, United States of America, 127 224 hospitalized poisoning cases were registered, of which 44 628 were included in a length-of-stay analysis. Poison centre consultation was associated with an 11.6-hour (95% CI: 10.4–13.0 hours) shorter mean length of stay overall, while data for children aged 0–6 years showed a larger reduction of 1.18 days (14).

A retrospective review of patients admitted for poisoning to a single hospital in Brazil showed that patients stayed in hospital for 3.5 days less when the poison centre was consulted than when it was not consulted (15).

Fully operational poison centres also offer **financial benefits** and represent value for money (Box 3). According to available evaluations, for every US\$ 1 spent, more than US\$ 13 were avoided in unnecessary health-care charges – including emergency room and physician visits, ambulance services and other medical treatments (giving a benefit-to-cost ratio of 13.39:1) (16).

Box 3.

Poison centres ensuring financial benefits: examples

In Israel, US\$ 99 383 of potential health care savings can be made by preventing unnecessary referrals in cases of silica gel poisoning among children aged under 6 years, thanks to poison information centre advice. The cost evaluation includes emergency department visits (saving US\$ 213 each) and community clinic tariffs (saving US\$ 67 each) (17).

Data found a potential cumulative reduction of US\$ 2078 charged per 10 patients in hospitals in Illinois, United States, among patients entering hospital with poison centre assistance. Statistics from 2010 confirmed that the length of hospitalization among poison centre-assisted patients was 0.58 days shorter than that among patients without poison centre assistance (18).

7 Expectations of policy-makers

Policy-makers are encouraged to:

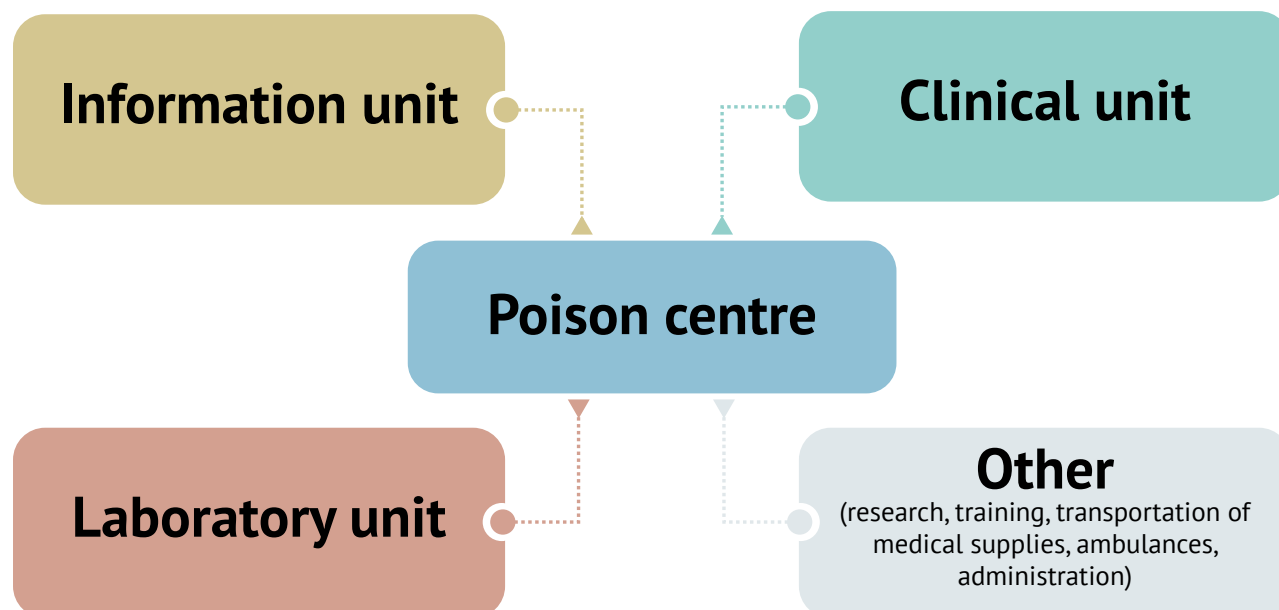
- make decisions about establishment or strengthening of poison centres using a step-by-step approach:
 - › **step 1:** setting up a poison information centre (providing advice during working hours initially, with a transition to 24-hour-a-day operation once established);
 - › **step 2:** setting up a clinical unit;
 - › **step 3:** setting up a laboratory unit;
- ensure sustainable financing of the poison centre operation;
- commit to support capacity-building, training and creating technical and other resources;
- ensure availability of antidotes and antivenoms;
- support toxicovigilance and poisoning prevention in the form of advocacy, facilitation and enforcement.

6 Structure of a fully operational poison centre

As a minimum, a poison centre is a toxicological information service operating 24 hours a day. The term “poisons/poisoning information centre” refers to an establishment that provides information and advice.

The term “poison centre” refers to an establishment that is both a poison information centre and has a clinical treatment unit and/or toxicological laboratory (Fig. 1).

Fig. 1. Structure of a poison centre



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³ All references accessed 13–14 March 2023.

Acknowledgements

The WHO Regional Office for Europe is grateful to co-authors Gillian Jackson, National Poisons Information Service, Royal Infirmary of Edinburgh, United Kingdom, and Mark Lawrence Zammit, Faculty of Medicine and Surgery, Department of Clinical Pharmacology and Therapeutics, Malta, for preparing this publication.

This publication was prepared with financial support from the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection and the German Federal Ministry of Health.

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Suggested citation. At least one poison centre in each country: summary for decision makers. Copenhagen: WHO Regional Office for Europe; 2023. License: [CC BY-NC-SA 3.0 IGO](https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

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Document number:
WHO/EURO:2023-7578-47345-69489