Chemical releases arising from technological incidents, natural disasters, conflicts, polluted environments, and contaminated foods and products are common. Between 2000 and 2020, there were over 1000 technological incidents involving chemicals worldwide, affecting over 1.85 million people.

The World Health Organization (WHO) Manual for the Public Health Management of Chemical Incidents (2009) and International Health Regulations (2005) (IHR) outline the principles and road maps to be followed in responding to chemical incidents. The IHR is the legal framework for global health security. All Member States are required to develop minimum core capacities to detect, assess, report and respond to acute public health events and emergencies. In 2020, the global capacity score for chemical events was 54%, with large variations between WHO regions, ranging from 32% in the WHO African Region to 67% in the European Region and 59% for the Western Pacific Region. The relatively low capacity scores reported for chemical events point to the need for an accelerated effort to strengthen capacities.

There is a need to provide a comprehensive overview of the principles and roles of public health in the management of chemical incidents and emergencies. This can be achieved by establishing or refining the role of public health in the development of preparedness plans for management of chemical incidents and enhancing capacity planning and assessment for chemical incidents. Public health has an essential role to play in preventing the occurrence of chemical incidents and minimizing their negative impacts on both the exposed population and the environment. However, many countries are still lacking competencies to assess risks to human health from exposure to chemicals, especially developing countries and countries with economies in transition in the Western Pacific Region.

**Objectives**

The webinar on Public Health Management of Chemical Incidents in the Western Pacific Region was held virtually (hosted in Seoul, the Republic of Korea) on 14 July 2023. The objectives of the meeting were:

- to increase knowledge and awareness of the public health management of chemical incidents;
- to share good practices and facilitate knowledge exchange among countries and organizations involved in public health management of chemical incidents, with the aim of driving change;
- to compare the application of principles and road maps outlined in the WHO Manual for the Public Health Management of Chemical Incidents and the IHR in the public health management of chemical incidents;
- to identify key initiatives that can improve public health management of chemical incidents; and
- to identify opportunities for collaboration among countries, particularly in...
areas lacking a public health management system for chemical incidents.

**Conclusions**

The webinar was organized into two parts. Part one consisted of presentations of cases of public health management of chemical incidents; part two was an information-sharing session conducted by some key selected participants.

**Part 1: Cases on public health management of chemical incidents in the Western Pacific Region**

- **Republic of Korea:** The promulgation of legislation for chemical safety in the Republic of Korea led to the establishment of a dedicated organization responsible for prevention, response, settlement and education related to chemical incidents – the National Institute of Chemical Safety. This development has significantly strengthened chemical incident investigations. To assess the health impact of chemical incidents, health impact surveys are conducted in collaboration with professional medical institutions. These surveys play a crucial role in patient treatment and help classify the relationship between chemical exposure during incidents and its subsequent health effects. The presentation highlighted the country’s experiences and insights, including the following key points:
  - The Republic of Korea has made significant progress in enhancing its institutional capacity, aligning with the key action area of the WHO Chemicals Road Map. The implementation of the Chemical Substances Control Act has bolstered the legal framework governing incident management and facilitated health outcome assessments.
  - The establishment of partnerships between national and subnational entities has proved vital for achieving efficient and effective health assessment. The inclusion of mental health considerations in health assessments following chemical incidents has led to improvements in the management of mental trauma experienced by victims.
  - Medical specialist assessments, with categorized outcomes, are instrumental in determining ongoing response strategies and enhancing public confidence in response efforts. The mobilization of additional resources, including contributions from private business entities, aid in establishing and maintaining long-term health assessments and follow-up arrangements.

- **Viet Nam:** Experiences were shared from a poison control centre in Viet Nam on managing a large industrial fire with the risk of mercury exposure in the country. To investigate industrial fire incidents with the risk of mercury exposure, comprehensive measures are taken, including analysing chemical concentrations in the atmosphere and conducting institutional investigations. Additionally, large hospitals play a leading role in coordinating media responses, victim investigations, information provision, victim exposure group classification, and screening. These efforts aim to alleviate anxiety among the affected population and efficiently address the aftermath of such chemical incidents. Key points included:
  - A press conference at the poison control centre addressed the mercury exposure incident, highlighting its toxicity and health risks.
  - The poison control centre implemented a systematic approach, categorizing risks among exposed groups.
Immediate action was urged for affected individuals, while long-term monitoring was proposed for those living near the factory.

By emphasizing the importance of public cooperation and vigilance, the safety and well-being of those affected were ensured through the active involvement of multiple government agencies.

**Philippines:** Presenters from the Philippine National Poison Management and Control Center shared their experience in responding to incidents, particularly the oil spill that occurred on the island of Guimaras. They established an action plan in collaboration with local parties and conducted an environmental impact survey that considered the well-being of communities. In the aftermath of the accident, affected residents were provided with necessary medical assistance, and special care was given to highly exposed residents belonging to vulnerable populations and living in at-risk areas. Key points included:

- Efforts were made to enhance the capabilities of the response teams and health-care providers, and effective communication was established to address residents’ concerns and grievances.
- The establishment of a surveillance system and a mechanism to follow up on the long-term health effects of the oil spill were pursued.
- Adherence to sound scientific principles is essential and proper data collection/evaluation can provide vital information on the general and toxicologic conditions in communities. In turn, the data provide sound guidance for appropriate actions.
- A multidisciplinary and multisectoral approach coupled with responsive/active leadership is an effective way to address toxicologic emergencies. However, such an approach will require effective communication, teamwork and commitment among the key players.

**Part 2: Information-sharing session from selected key participants**

Presenters from the Republic of Korea, the Philippines, Japan and New Zealand shared their chemical management experiences with other participants. They explored lessons learnt, best practices and key recommendations from previous experiences, aiming to foster knowledge exchange and collaboration in effectively addressing the health impacts of chemical incidents.

- In the Republic of Korea, the importance of evaluating the link between exposure to hazardous substances during incidents and its impact on health has been recognized, particularly through the chemical incident health impact survey. The health impact surveys are conducted in accordance with the WHO 2009 manual, particularly focusing on recovery. A significant focus has been placed on identifying the extent of impact on affected residents based on the severity of exposure. Substantial efforts are being dedicated to developing and advancing exposure evaluation tools and methodologies, including utilizing location information during exposure, conducting acute health impact assessment, implementing follow-ups, and fostering effective risk communication. Advanced exposure evaluation tools are being developed and there are plans to share these with other countries.

- In the Philippines, the response to chemical incidents – such as mercury leakage and odor incidents – has led to the recognition that schools, in addition to chemical factories, are essential locations to consider when incidents occur. As part of these efforts, guidelines for responding to chemical
incidents were developed. These encompass the definition of chemical incidents, the characteristics of ammonia and other toxic substances, and the proactive preparation of at-risk areas and key institutions for defense through the utilization of risk-mapping tools. Guidelines for vulnerable populations are being prepared to focus on capacity-building, and active participation from the private sector and civil society is encouraged alongside government-level efforts.

- In Japan, an incident occurred involving high concentrations of benzene in drinking-water due to gas exposure. Measuring benzene proved challenging due to its short half-life, making it difficult to obtain timely and accurate measurements. Additionally, determining the actual exposure period and the duration of consuming contaminated water posed challenges. While acute effects were most straightforward to assess in relation to the degree of exposure, determining long-term effects was more complicated. Furthermore, difficulties arose in communicating with residents and the media regarding the incident. Preventing the recurrence of incidents relies on sharing valuable insights through capacity-building initiatives, establishing comprehensive databases and promptly reporting incidents.

- In New Zealand, the majority of chemical incidents were related to natural disasters. These included five major incidents which were all linked to natural calamities, with some occurring in remote areas due to volcanic eruptions. Fortunately, the overall impact of these incidents was not significant. There is a need for support in terms of advance response planning, especially in terms of the classification, communication and management of risks associated with incidents.

**Recommendations for Member States**

Member States are encouraged to consider the following:

1. Develop and enact effective legislation for chemical safety and incident management in public health.
2. Establish dedicated organizations for preventing and enhancing responses to chemical incidents.
3. Secure financial resources for comprehensive health outcome assessments.
4. Prioritize capacity-building initiatives, focusing on equipping responders and authorities with the necessary skills to effectively manage chemical incidents.

**Recommendations for WHO Secretariat**

WHO is encouraged to consider the following:

1. Facilitate knowledge and information sharing among Member States.
2. Provide technical support and resources to foster capacity-building initiatives in Member States.
3. Take the lead in evidence-building to inform policy and practice for health outcome assessment following chemical incidents.
4. Provide technical support to Member States in developing international and local tools and research to strengthen incident response capabilities.