Introduce yourself (name, job title, organization and country) in the chat section. Only the presenter and facilitator will speak. Any comments or questions from attendees should be typed in the chat section.

Please kindly keep you microphone muted and cameras off during the discussion.

NOTE: If you are having technical issues, please join the WhatsApp group for assistance: https://chat.whatsapp.com/BKTKGwt5cnNCgG9BOzYK1i

**Discussion 1**

- **Topic:** The Link between Climate Change and Chemical Accidents
- **Date:** 20 April 2022
- **Time:** 14h00 – 15h30 (GMT + 2)
- **Presenters:** Marie-Ange Baucher, OECD; Halshka Graczyk, ILO and Semia Gharbi, AEEFG
- **Facilitator:** Prof Hanna-Andrea Rother, University of Cape Town
Chemicals and Sustainable Development Goals Community of Practice

PRESENTERS

Marie-Ange Baucher
Organisation for Economic Cooperation and Development (OECD)

Dr. Halshka Graczyk
International Labour Organization (ILO)

Semia Gharbi
Association of Environmental Education for Future Generations (AEEFG)
PREVENTION OF NATECH: CHEMICAL ACCIDENTS AND CLIMATE CHANGE
Chemical accidents triggered by Natural Hazards

- **Natural hazards** (e.g. earthquakes, floods, lightening) may challenge the **safety** and **operation** of hazardous installations and trigger an accident;

- These accidents are called **Natural hazard triggered Technological accidents** – Natech;

- Triggered by « common » natural hazards to larger natural disasters.

Eruption of Cumbre Vieja volcano on La Palma, Spain 11 October 2021: Lava engulfs a cement factory which catches fire
Milford Haven, UK, 1994 (lightning)
On July 24, 1994, an electrical storm caused disruption to power supplies and a loss of process control at a large refinery near Milford Haven.
https://www.hse.gov.uk/comah/sragtech/casetexaco94.htm

Feyzin, France, 2011 (lightning)
On September 17, 2011, during a thunderstorm over Feyzin, France, lightning hit a refinery.
https://www.aria.developpement-durable.gouv.fr/fiche_detailllee/40953/

Crosby, Texas, United States, 2017 (flood)
On August 24, 2017, Hurricane Harvey hit southeast Texas. Over the next days, at a facility at Crosby which handled organic peroxides, rainfall exceeded the equipment design elevations and caused the plant to lose power, backup power, and critical organic peroxide refrigeration systems.
https://www.csb.gov/arkema-inc-chemical-plant-fire/

Chiba, Japan, 2011 (earthquake)
On 11 March, 2011, the Magnitude 9 Great East Japan earthquake triggered multiple fires and explosions at the Liquefied Petroleum Gas (LPG) storage tank farm of a refinery in Tokyo Bay.

Kolin, Czech Republic, 2011 (low temperature, accident with transboundary effects)
On January 9, 2006, there was a release of approx. 0.2 tons of cyanide at a chemical factory in Kolin. One of the accident causes was the failure of a floating alarm device controlling the max level of wastewater in the sump. Temperatures fell from 13°C to -15°C in the night, causing a freezing of the device, that had no resilient measurement technology or heating system.
Natech & Climate Change

- Changes in climate could affect the intensity, frequency & geography of natural hazards;

- Coupled with a growing human expansion (industrialisation, urbanisation)

  Possible impact of climate change on occurrence & severity of Natech;
  Integration of climate change risks and uncertainties into Natech risk management.
Prevention of Natech Risks and Integration of Climate Change (1/3)

- **Risk Awareness and Leadership**
  - Raise Awareness of Natech risk at all level in an enterprise;
  - Senior leaders to be aware that changes in climate could affect the intensity, frequency and geography of natural hazard;
  - Assess and update measures as information becomes available.

- **Need to consider:**
  - Regularly assessing regional climate projections (hazard mapping);
  - Developing an adaptation strategy;
  - Updating assessment and measures as further information becomes available;
  - Implementing new enhanced safety measures.
Prevention of Natech Risks and Integration of Climate Change (2/3)

Importance of Communication between Public Authorities and Industry on the risk of (changes in) natural hazards;

Importance to engage through a multi-disciplinary approach - experts such as meteorologists, hydrologists, geologists working alongside civil & chemical engineers, & experts on process safety.
Prevention of Natech Risks and Integration of Climate Change (3/3)

- Particular challenge is how to respond and adapt to possible changes:
  - exchanging on and learning from existing adaptation measures, on their nature, effectiveness and cost (within and beyond the chemical sector).

- Considerations of possible changes in climate & impact on natural hazards in regulations, licensing, permitting and inspections.
OECD working on Natech Risk Management since 2008

- Under the leadership of Germany;

- In cooperation with the EC Joint Research Center, the UNEP/OCHA Joint Environment Unit, UNECE;

- Goals:
  - Investigate the specificities of Natech for the prevention, preparedness and response to chemical accidents,
  - Exchange experience across countries (e.g. good practices, lessons learnt from Natech accidents), and
  - Provide guidance on Natech risk management.

- Multiple workshops and publications, results available at:
1. What is Natech?
2. The causes and consequences of Natech accidents
3. What makes the management of Natech risk so special?
4. How are Natech risks managed?
5. Natech risk management: examples of international support and transboundary cooperation

OECD Guidance on Natech Risk Management (planned for 2024)

- Aims to:
  - increase attention to Natech risks by senior leaders of industry and public authorities;
  - be a high level guidance with essential elements of Natech Risk Management;
  - consider aspects such as: disaster risk reduction, adaptation to climate change, sustainable development, transboundary and international cooperation.

- Developed in cooperation with partner agencies – UNECE, Joint Research Center, Joint UNEP/OCHA Environment Unit;

- To inform the development of the Guidance: Joint seminar UNECE/OECD/EU (EC JRC and EIB) on the management of Natech in the UNECE and OECD regions and beyond, November 2022.
Question 1

Do you think there is sufficient awareness of Natech risks in your country in relation to climate change? What are the main challenges you can see for establishing prevention measures for Natech?

This question will be discussed for 20 minutes.

Please use chat only, mute your microphone, and turn your video off.

Thank you!
<table>
<thead>
<tr>
<th>Country</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jamaica</td>
<td>not sure</td>
</tr>
<tr>
<td>Botswana</td>
<td>No</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>No, I am not aware</td>
</tr>
<tr>
<td>South Africa</td>
<td>South Africa is currently experiencing the impact of 5 months worth of rain in one day and the floods have impacted on chemical industries. The impact is yet to be assessed.</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Yes</td>
</tr>
<tr>
<td>Iran</td>
<td>Yes</td>
</tr>
<tr>
<td>Country</td>
<td>Answer</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Madagascar</td>
<td>No - There is awareness but in practice the process is not efficient. An example is the recent oil spill due to high tides (tsunami) after an earthquake a few months ago.</td>
</tr>
<tr>
<td>South Africa</td>
<td>Not sure, South Africa</td>
</tr>
<tr>
<td>Tanzania</td>
<td>No - Tanzania</td>
</tr>
<tr>
<td></td>
<td>Overflowing off water epuration plants by unusually heavy rainfall and subsequent contamination of rivers by untreated water (Germany)</td>
</tr>
<tr>
<td></td>
<td>Yes - South Africa. However, more awareness is required</td>
</tr>
<tr>
<td></td>
<td>Not sure - Tanzania</td>
</tr>
</tbody>
</table>
Are you aware of Natech accidents that happened in your country? (Yes/no/not sure and list country in response)

- No sure. This new information encourages reaching out to the National Disaster Management Unit to really determine the true position in regard to NATECH
- Not sure, South Africa.
- Sometimes the Lightning causes fire and human casualty in Nepal
- Not to my knowledge
- Malawi, not sure
- Not sure
- Not aware of any in Zambia
Are you aware of Natech accidents that happened in your country? (Yes/no/not sure and list country in response)

- Not sure
- Not sure
- Yes - Zambia
- There is lack of awareness about Natech in Nepal
- Due diligence and early preparedness is very weak in Nepal
- Drought causing shortage of cold water in rivers and lack of cooling water, so causing overheating of nuclear power plants causing them to be shut down before meltdown happens (France)
- Natural hazards like GLOFS has devastating damage in Nepal
- Nepal: Lack of aggregated data on natural disaster related accidents
Is Natech included in your country’s measures on the prevention, preparedness, and response to chemical accidents? (Yes/no/not sure and list country)

Iran: Yes, need more work on Enforcement.

I am not sure if this is included in the disaster management programmes that respond to national disasters.

Not sure about South Africa

Some industries perform major risk assessment studies but it is still limited.

Peru: Yes, but there needs to be better enforcement and implementation.

Yes, normal natural events like strong rains, draughts, heatwaves are taken into account, but changing climate leads to much more extreme situations overpassing those safety measures and causing spillovers and other problems (Germany).

Not sure. Botswana has a comprehensive disaster management plan, however this is centered mainly around natural disasters like floods and not really on chemicals.

Malawi, not.
Is Natech included in your country’s measures on the prevention, preparedness, and response to chemical accidents? (Yes/no/not sure and list country)

- **Kenya**: Provided for among other disasters/accidents.
- **Not sure, Tanzania**.
- **Not sure - Senegal**.
- **Yes in Zambia they are included under Disaster and Management and Mitigation plan**.
- **Yes mainly for flood management**.
- **Ethiopia**: The disaster management policy, the legislations and the institution address only the natural hazard.
- **Not sure - Madagascar**.
- **Yes - South Africa**.
Is Natech included in your country’s measures on the prevention, preparedness, and response to chemical accidents? (Yes/no/not sure and list country)

- Not sure_Tanzania
- Jamaica: not sure if this is included in the disaster management plan but it would be good for inclusion
- Yes
The World of Work and Major Industrial Accident Prevention related to Climate Change

Chemicals and Sustainable Development Goals Community of Practice

Halshka Graczyk, Technical Specialist on Occupational Safety and Health
LABADMIN/OSH Branch
ILO Geneva
graczyk@ilo.org
Global OSH challenges: The threat of climate change

- **Heat stress**: increases in temperatures will render 2 percent of all working hours as too hot to work by 2030, resulting in a loss of 72 million full-time jobs, disproportionately effecting the poor and outdoor workers (agriculture)

- **Reduction in areas where work is possible**: Due to heat, rising sea levels and other factors, many geographical areas will become impossible to work in.

- **Work-related health effects**: heat stroke, heat exhaustion, poorer cognitive function, increased risk of injury or safety lapses, dehydration, respiratory and cardiovascular diseases, cataracts, skin and eye cancer and weaken immune function

- **Extreme weather events**: Workers involved in emergency, and clean-up work may be at increased risk of exposure to chemical and infectious agents, hazards and psychological disorders

- **Green jobs and new risks**: New jobs associated with green technology may come with new, unforeseen risks
Climate Change and Major Industrial Accidents

Safe storage of chemicals

- Increased temperatures may impact where chemicals can be safely stored
- Extreme weather events, such as flooding or landslides, can compromise the integrity of chemical storage sites such as underground tanks or landfills, leading to chemical exposure and potential major industrial accidents

New risks in the Green Economy

- New technologies and chemicals developed for sustainable development may introduce new, unknown risks for the world of work and major industrial accidents
ILO Instruments on Major Industrial Accidents

Prevention of Major Industrial Accidents Convention, 1993 (No. 174)

Ratified by 18 member States

- Convention aims to prevent major industrial accidents involving hazardous substances and minimize the consequences of such accidents
- Outlines responsibilities of employers, competent authorities and workers and their representatives, as well as the responsibilities of states that export hazardous substances

Prevention of Major Industrial Accidents Recommendation, 1993 (No. 181)

Code of Practice on Major Industrial Accidents

Advancing social justice, promoting decent work
Background of the Prevention of Major Industrial Accidents Convention, 1993 (No. 174)

Major Industrial Accidents in the 20th Century

- **Flixborough Disaster 1974**: A cyclohexane vapour cloud explosion in Flixborough, UK took 28 workers’ lives and wounded 36 others.

- **Seveso 1976**: One of the reactors of a chemical manufacturing plant exploded on the outskirts of Meda, Italy releasing a significant amount of toxic chemicals known as dioxins.

- **Bhopal 1984**: 30 tons of methyl isocyanate (MIC) gas was released from a pesticide plant in Bhopal, Madhya Pradesh, India, affecting more than 600,000 workers and nearby inhabitants. Government figures estimate that there have been 15,000 deaths as a result of the disaster over the years.

- **The Phillips Disaster 1985**: A chemical release from a chemical complex at Pasadena, Texas resulted in 23 fatalities and wounded 130-300 workers.

- **Chernobyl 1986**: One of four nuclear reactors at the Chernobyl power station in Ukraine exploded. This released at least 100 times more radiation than the atom bombs dropped on Nagasaki and Hiroshima. The explosion killed 31 people immediately and thousands of people in the aftermath.
ILO Chemical Conventions

The ILO focuses on assisting its 187 member States to ratify and implement the main ILO chemicals-related Conventions:

- The Chemicals Convention, 1990 (No. 170)
- Asbestos Convention, 1986 (No. 162)
- Working Environment (Air Pollution, Noise and Vibration) Convention, 1977 (No. 148)
- Benzene Recommendation, 1971 (No. 144)
- Occupational Cancer Convention, 1974 (No. 139)
- Labour Inspection (Agriculture) Convention, 1969 (No. 129)
- Safety and Health in Agriculture Convention, 2001 (No. 184)
- Safety and Health in Construction Convention, 1988 (No. 167)
- Safety and Health in Mines Convention, 1995 (No. 176)
ILO Occupational Safety and Health Conventions

The ILO has over 40 instruments related to OSH, these are also applicable in many cases to the use of chemicals in the world of work.

- Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)
- Occupational Safety and health Convention, 1981 (No. 155)
- Occupational Health Services Convention, 1985 (No. 161)

These general OSH Conventions include many provisions which are important in preventing accidents at work, including MIAs.
Codes of Practice related to chemicals

- Safety in the use of chemicals at work
- Prevention of major industrial accidents
- Safety and health in opencast mines
- Safety and health in agriculture
- Safety and health in construction
- Safety and health in forestry work
- Safety and health in shipbuilding and ship repair
- Safety and health in ports
- Safety and health in the non-ferrous metals industries
- Ambient factors in the workplace

Advancing social justice, promoting decent work
Areas for action in the world of work

- Ratification of relevant ILS on chemicals, MIAs and OSH
- Implementing OSH management systems, including risk assessment at the enterprise level
- Social dialogue between governments, workers and employers on new emerging risks related to climate change and MIAs
- Research on the new risks related to “Green jobs” and the green economy
Resources

ILO Prevention of Major Industrial Accidents Convention No. 174

ILO Prevention of Major Industrial Accidents Recommendation No. 181

ILO Code of Practice on Major Industrial Accidents

ILO issue paper - Climate Change and Labour: Impacts of Heat in the Workplace

ILO research report - Working on a warmer planet: The effect of heat stress on productivity and decent work

ILO video, OSH and climate change
Thank you

Halshka Graczyk, Technical Specialist on Occupational Safety and Health
LABADMIN/OSH Branch
ILO Geneva
Graczyk@ilo.org
Question 2:

What do you see as the role of the world of work in MIA prevention when it comes to increasing occupational safety and risks posed by climate change?

This question will be discussed for 20 minutes. Please use chat only, mute your microphone, and turn your video off. Thank you!
Are you familiar with OSH legal frameworks in your country that help protect workers from OSH risks due to MIAs or other hazardous exposures?

- Jamaica: Yes I am aware
- Priority should be given to due diligence about the possible accident prevention
- Yes, Tanzania
- Yes - Tanzania
- Yes, Zambia has legal frameworks in place
- Yes/Guyana
Are you familiar with OSH legal frameworks in your country that help protect workers from OSH risks due to MIAs or other hazardous exposures?

- Yes
- Iran, yes.
- Nepal: Labour Act has provision of OSH
- Yes - South Africa
- Yes, in Kenya the occupational safety and health act of 2007 regulates all OSH risks
- Yes - Madagascar
- Yes, Zimbabwe
- Yes - Tanzania
- Ethiopia - Yes
Are you familiar with OSH legal frameworks in your country that help protect workers from OSH risks due to MIAs or other hazardous exposures?

<table>
<thead>
<tr>
<th>Country</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>Yes, Major Hazard Installations Regulations under the OHS Act in South Africa.</td>
</tr>
<tr>
<td>Kenya</td>
<td>Yes, aware with OSH within the country but generally looks at the work place but not addressing MIA as stand alone areas. There is a mention on how to deal with spills as well.</td>
</tr>
<tr>
<td>Botswana</td>
<td>Factories Act, and Mines Minerals and quarries act has provisions for OSH.</td>
</tr>
<tr>
<td>European Union</td>
<td>Yes, there is an obligation to perform risk assessments and take prevention and protection measures. (European Union)</td>
</tr>
<tr>
<td>Senegal</td>
<td>Yes senegal</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>Yes, In Ethiopia labor proclamation no 466/2005</td>
</tr>
<tr>
<td>Nepal</td>
<td>Nepal: Our OSH related legal frameworks is not sufficient to protect workers from all OSH risks due to MIAs</td>
</tr>
<tr>
<td>Malawi</td>
<td>Yes.</td>
</tr>
</tbody>
</table>
Are you familiar with OSH legal frameworks in your country that help protect workers from OSH risks due to MIAs or other hazardous exposures?

Yes, we instruction by ministry of labor, ministry of environment and of course some national conversions our government ratify. Some companies perform life drills on some accident scenarios with governate officials.

Occupational health and safety in Botswana is regulated by various pieces of legislation. The principal laws are the Factories Act; the Agrochemicals Act; the Mines, Quarries Works & Machinery Act; the Radiation Protection Act and the Workers Compens.

Extreme Weather condition caused by Climate Change has direct impact on workers.
<table>
<thead>
<tr>
<th>Country</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eswatini</td>
<td>Not Sure</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Yes</td>
</tr>
<tr>
<td>Madagascar</td>
<td>Not Sure</td>
</tr>
<tr>
<td>Iran</td>
<td>In some extent, due to climate change weather fluctuations are getting more frequent in Iran and so in most cases there are awareness mostly in the national TV.</td>
</tr>
<tr>
<td>South Africa</td>
<td>Not sure, South Africa.</td>
</tr>
<tr>
<td>Zambia</td>
<td>It is an emerging risk but not yet fully incorporated in many workplace OSH policies in Zambia</td>
</tr>
<tr>
<td>South Africa</td>
<td>Not really in South Africa - climate change is being dealt with as a separate issue.</td>
</tr>
<tr>
<td>Malawi</td>
<td>Yes, recently climate change was integrated as part of environmental studies</td>
</tr>
<tr>
<td>Climate change is seen to influence pesticide use in Agriculture.</td>
<td></td>
</tr>
<tr>
<td>Country</td>
<td>Response</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Peru</td>
<td>Yes, specially considering the region's propensity to earthquakes.</td>
</tr>
<tr>
<td>Yes - Tanzania</td>
<td>Yes - Tanzania</td>
</tr>
<tr>
<td>Not Sure - Botswana</td>
<td>Not Sure: Botswana</td>
</tr>
<tr>
<td>Yes - South Africa</td>
<td>Yes - South Africa</td>
</tr>
<tr>
<td>Not sure - Senegal</td>
<td>Not sure - Senegal</td>
</tr>
<tr>
<td>Yes - Guyana</td>
<td>Yes / Guyana</td>
</tr>
<tr>
<td>Not sure / Madagascar</td>
<td>Not sure / Madagascar</td>
</tr>
<tr>
<td>In Zimbabwe, not only is it seen as a workplace related threat but actually a ticking time bomb meant to wipe out agriculture operations</td>
<td>I am not Shure, Ethiopia</td>
</tr>
</tbody>
</table>
Is climate change seen as a workplace related threat in your country / working experience? (Yes/no/not sure and list country in response)

- Yes in Tanzania.
- Yes, in Zambia it is. For example flooding, cyclones etc affect a lot of workplaces.
- Yes, South Africa - especially in our workplaces implementing SDG’s (specifically SDG 13).
- No - South Africa
- Yes it is, people depend on climate conditions might shift from one place to another due to changes in climate. eg flood could migrate people from affected area or Agriculture loss caused by drought could shift people searching for areas suited for
- Jamaica: Climate change is not seen as a workplace related threat. There is more groundwork that needs to be done in educating civil society on the local impact of climate change.
- The major effect of climate change perceived is that it changes the probability and frequency of the occurrence of extreme events (like “1000 year floods”), and that those measures taken into account before according to the old probabilities insuffici
- Yes, in Kenya, however, climate change is still a gray area to clearly be termed as a work related threat.
Wastes/chemicals and climate changes

Semia Gharbi April 2022
Activities increasing greenhouse gases

- energy supply, power generation, combustion of fuels
- industrial and metallurgical processes,
- mobile applications,
- waste management and burning of wastes,
- and land related activities

Results

Emissions from these sources reached a record of:
37.5 GtCO2/year to rise GHGs at an 1.5% per year
methane (CH4), the next most important GHG, grew at
1.3% per year.

Emissions of Nitrous oxide (N2O) at 1.0% per year
Emissions of fluorinated gases (SF6, HFCs, PFCs), at
4.6% per year
(UNEP, 2019a)
Relation between chemicals and CC

- Persistent Organic Pollutants (POPs)
  - potential for long-range transport,
  - persistence in the environment,
  - bio-magnification and bio-accumulation in living organisms,

Pesticides
Production of PFOS and PFAS such flame retardants FRB
Dioxins, furans, and polychlorinated biphenyls (PCBs)
Major impacts of climate change with potential links to hazardous chemicals and waste management

<table>
<thead>
<tr>
<th>Region</th>
<th>Climate change impacts</th>
<th>Potential links to hazardous chemicals and waste management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arctic</td>
<td>Melting of sea ice and permafrost, increased precipitation</td>
<td>Local contamination due to disruptions of pipelines and storage facilities, for example, leading to oil and chemical spills</td>
</tr>
<tr>
<td>Africa</td>
<td>Reduced water availability and increased droughts, reduced crop productivity, changes in incidence and geographic range of vector and water borne diseases, increased wildfires</td>
<td>Increased fertilizer and pesticide use, increased use of pesticides, increased use of agricultural plastics, unintentional releases and increased movement of POPs, mercury and other chemicals</td>
</tr>
<tr>
<td>Australasia</td>
<td>Increased intensity and frequency of flooding</td>
<td>Increases in releases from waste disposal sites</td>
</tr>
<tr>
<td>North America</td>
<td>Increased wildfires, urban floods in coastal and riverine areas, increased cyclones</td>
<td>Unintentional releases and increased movement of POPs, mercury and other chemicals, increases in releases from waste disposal sites and other disrupted infrastructure</td>
</tr>
<tr>
<td>Central and South America</td>
<td>Reduced water availability in semi-arid regions, increased flooding and landslides in urban areas in other regions, decreased food production and quality, increased spread of vector-borne diseases, increased wildfires</td>
<td>Unintentional releases and increased movement of POPs, mercury and other chemicals, increased releases from waste disposal sites and other disrupted infrastructure, increased fertilizer and pesticide use, increased use of pesticides, increased use of agricultural plastics</td>
</tr>
<tr>
<td>Europe</td>
<td>Increased impacts flooding in river basins and coasts, reduced water availability, increased wildfires</td>
<td>Unintentional releases and increased movement of POPs, mercury and other chemicals, increased releases from waste disposal sites and other disrupted infrastructure, increased fertilizer and pesticide use, increased use of pesticides, increased use of agricultural plastics</td>
</tr>
<tr>
<td>Asia</td>
<td>Increased flooding in some areas, including that linked to sea level rise, increased wildfires</td>
<td>Unintentional releases and increased movement of POPs, mercury and other chemicals, increased releases from waste disposal sites and other disrupted infrastructure, increased fertilizer and pesticide use, increased use of pesticides, increased use of agricultural plastics</td>
</tr>
<tr>
<td>Small Island Developing States</td>
<td>Risks of coastal flooding, heat stress, changes in precipitation patterns</td>
<td>Increased releases from waste disposal sites and other disrupted infrastructure, increased fertilizer and pesticide use</td>
</tr>
</tbody>
</table>

Temperature change in the last 50 years

2011-2021 average vs 1956-1976 baseline


Future floating zones
Waste management infrastructure and operations
GLOBAL RESPONSES

- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal;
- The Rotterdam Convention on the Prior Informed Consent Procedure for certain Hazardous Chemicals and Pesticides in International Trade;
- Kyiv Protocol on pollutant release and transfer registers (PRTRs), covering GHGs, POPs, mercury, as well as transfers of waste;
- (UNECE) Convention on Long-Range Transboundary Air Pollution;
- Convention on the Transboundary Effects of Industrial Accidents supports countries in the prevention of, preparedness for and response to industrial accidents;
- SAICM
- ............and others
What will be the solutions and alternatives?
Question 3:

How can climate changes increase the problem of hazardous wastes movement and its impact on environment and health?

This question will be discussed for 20 minutes. Please use chat only, mute your microphone, and turn your video off. Thank you!
Why is illegal traffic of wastes still happening even if there is a Convention treating the movement of wastes and hazards wastes?

- Nepal: Weak Implementation of Convention
- Iran: Please look at many developing countries; there are regulations, global conventions, etc. But rarely followed, we are facing now with big problem called Toxic Trade in Asian countries.
- 1. Weak enforcement of conventions
2. Ignorance (lack of knowledge)
3. Lack of integrity - corruption
- Profits generated through illegal activity are much higher than risk of having to pay penalties
- No proper enforcement of regulation or lack of inspection and monitoring activities to identify illegal traffic of wastes
- Poor border control and law enforcement is the result why illegal traffic still exist.
- Poor enforcement
- Weak law enforcement - Ethiopia
- Lack of enforcement, avoiding cost, lack on awareness at some levels
Why is illegal traffic of wastes still happening even if there is a Convention treating the movement of wastes and hazards wastes?

- Corruption of officials in sending/receiving countries which can be bought by the waste Mafia
- Probably evading paying the applicable transit fees
- In developing countries I think this is still happening due to corruption among unethical law enforcers, there is also a lack of sufficient law enforcement offices and finally loopholes in existing laws and regulations
- Poor enforcement
- Negligence and Corruption
- The convention applies to countries that have agreed to the conditions of that particular convention. This implies that countries who are not party go scot free even when they abrogate these international agreements.
- Inadequate enforcement in many cases particularly in LMICs. Sometimes, "waste" comes in as donations very close to their end of shelf life.
- Lack of enforcement
- Mostly a mismatch between policy, legislation and legal enforcement.
Why is illegal traffic of wastes still happening even if there is a Convention treating the movement of wastes and hazards wastes?

In my opinion, this stems from:
1. Lack of monitoring across borders
2. Lack of enforcement in policies/legal framework to mitigate the same
3. Lack of sanction enforcement
4. Inadequate infrastructure in local contexts

Porous borders due to corruption due to poverty on most of these borders. Inadequate control by law enforcers on movement of goods in and out of different countries. Weak policies on enforcement of customs laws as well as a heavy bearing on this

I think some nations although part of these conventions find ways to bypass the laws that have been put in place and look to serve their own interests

One weakness is in implementation strategies

Nepal: Lack of infrastructure such as laboratory as well as trained human resources to tackle the illegal waste trading

I think the monitoring mechanism for movement of wastes by water, especially for developing countries is weak and this is taken advantage of by the illegal traffickers.

Madagascar: corruption and poor border control

Triangle situations: legal shipment to one country, from which the waste is then passed on illegally because of inadequate controls and enforcement (like for example from Europe to Turkey, and from there to Asia)
Why is illegal traffic of wastes still happening even if there is a Convention treating the movement of wastes and hazards wastes?

- Because of the missing rigor in the surveillance and control of the traffic. But also a good control strategy.
- Unclear definition of waste, many broken down items (cars, electronics, old tires...) are shipped as “used items”, while they are no longer truly usable.
- Inadequate capacity to monitor movements/activities.
- Waste find the news ways to get in the countries in the form of new recycled product fully loaded with the toxic chemicals.
- The burden of financial gain and the ‘risk’ of penalties result in illegal activity.
- The weak enforcement and coordination in addressing the illegal traffic of waste coupled with low understanding of the convention.
- Week Implementation and enforcement mechanism ...and the The cost associated with new chemical and the higher the recycling coast.
- Companies are free to declare an item as a product or as waste, so things are not declared as waste (with often very phony reasons) and thus are not shipped under waste regulation Basel convention, because not declared as waste.
How can climate changes increase the impacts of hazardous waste and other wastes?

An example would be increased intensity and frequency of flooding will increase unintentional releases from waste disposal sites.

Many dangerous chemical ingredients become increasingly mobile with greater heat and thus have higher rate of diffusion out of products.

Increased flooding and perturbations of soil and riverbanks re-mobilizes chemicals which have been deposited and immobilized there.

Iran: Simply most of chemicals reactions go faster in higher temperatures, also more recent weather fluctuations due to climate change already caused more HW problems.

Increase toxicity and transportation to the larger and wider distance.

If there is increase flooding then toxic waste can impact endangered environment.

Climate changes increase risks of floods, increase of temperatures thus increase impacts of hazardous waste and other wastes.

The climate change week the economy and our adaptive capacity in all aspect that lead us to week as for the look for new technology and good alternatives.
How can climate changes increase the impacts of hazardous waste and other wastes?

- By increasing the toxicity of wastes, distributing wastes to different places
- Each chemical has a certain point of temperature at which it moves into a gaseous phase, with increased temperatures this point is reached more frequently
- Flood water will wash and carry the hazardous waste from one place to the other areas, thus spreading the contamination. High temperatures will also contribute to fires if it exceeds the flush point of pesticides
- Micro plastics found in the world highest peak of Mt Everest
- Climate change can increase the formation of fires in landfill sites due to high temperatures
- Tornados, fierce winds etc. occur more often with climate change and can transport hazardous waste and chemicals to far away regions, spreading contamination far and abroad
- Climate change is related to an increase in hazardous waste and particularly during high heatwaves, flooding.
- Heat stress increase chemical toxicity. Heat causes evaporation and easily available in the environment through inhalation. Changing the nature of the compounds into more hazardous chemicals.
- Heat makes the polluted hot air travel longer distances and thereby increase the exposed populations. It may also increase the rates of reactions.
How can climate changes increase the impacts of hazardous waste and other wastes?

With warmer oceans, hazardous waste can travel to far places.

The increasing frequency and probability of climate change related extreme events is not really taken into account by government regulation. It is more the insurance industry which pushes companies to take it into account because of their risks.
THANK YOU
for attending
discussion one!

Please complete the evaluation question on the screen – thank you!

SAVE THE DATE FOR DISCUSSION 2:

Date: 6 July 2022
Time: 14h00 -15h30 GMT+2
Registration link:
https://unep.webex.com/unep/j.php?RGId=rbf5eb1f72e427b515711de1f1f30693

All resources and discussion summaries from the CSDG CoP 2022
Discussions are available at the following link:
https://saicmknowledge.org/topic/community-practice

This activity is supported by the Global Environment Facility (GEF) project ID: 9771 on Global Best Practices on Emerging Chemical Policy Issues of Concern under the Strategic Approach to International Chemicals Management (SAICM).
How will you use the information discussed at today's session to inform your work?

Academic and professional practice
Share with colleagues and use the info for my project write up
More informed discussion with colleagues.

TO IMPROVE ON WASTE MANAGEMENT IN MY ORGANIZATION
Discuss the information with relevant stakeholders at various meetings
Share it with my fellow and learn more about what have been discussed today

Useful
It will be part of my Teaching material
Share with envennnementnal colleages
How will you use the information discussed at today's session to inform your work?

- share the information with my colleagues
- For planning; Public Awareness creation;
- For better understanding in chemicals management.

My work involves managing chemicals from a regulatory point of view.