

Exhibition on “SEA WASTE CONTAMINATION” & “ENVIRONMENTAL EFFECTS OF WAR WEAPONS”

During the Conference “CRETE 2014”, an exhibition focusing on the effects of sea waste and war weapons contamination took place at the hall venue. This exhibition was organized and created by the School of Environmental Engineering of the Technical University of Crete (Laboratory of Toxic and Hazardous Waste Management) and all the participants have introduced to the theme of the Round Table Discussion scheduled at the Closing Ceremony.

1_Effects of war



THE CONSEQUENCES OF WAR - An Environmental Perspective

Environmental Perspective

War is a major cause of environmental damage. It leads to the destruction of natural resources, displacement of populations, and the release of hazardous substances into the environment.

War and the Environment

- Direct damage to the environment: destruction of infrastructure, displacement of populations, and release of hazardous substances.
- Indirect damage: deforestation, soil erosion, and water pollution.

War and the Environment: Military Activities

- Explosion of munitions: release of toxic gases and heavy metals.
- Use of landmines: contamination of soil and water.
- Use of chemical and biological weapons: release of toxic agents.

War and the Environment: Weapons

- Conventional Weapons:** High explosive, incendiary, and fragmentation weapons.
- Chemical Weapons:** Sarin, VX, and mustard gas.
- Biological Weapons:** Bacteria, viruses, and toxins.
- Nuclear Weapons:** Atomic bombs and nuclear reactors.

War and the Environment: Long-term Impacts

- Soil contamination: heavy metals and toxic substances.
- Water pollution: oil spills and chemical waste.
- Deforestation: destruction of forests and habitats.
- Displacement of populations: refugees and internally displaced persons.

2_Case studies



ENVIRONMENTAL CONSEQUENCES OF WAR - Recent Years

Gulf War 1991 & Iraq War 2003

The Gulf War (1991) and the Iraq War (2003) have caused significant environmental damage. Oil spills, deforestation, and the release of hazardous substances have contaminated the environment.

Chernobyl Disaster

The Chernobyl nuclear power plant disaster in 1986 is a major environmental catastrophe. It released large amounts of radioactive material into the atmosphere, contaminating the surrounding area.

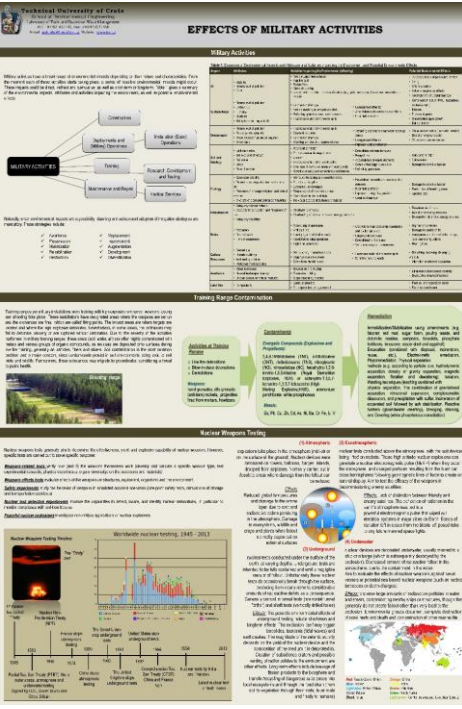
Case Study: Chernobyl Disaster

- On April 26, 1986, a reactor at the Chernobyl nuclear power plant in Ukraine suffered a catastrophic failure.
- The explosion released a large amount of radioactive material into the atmosphere.
- The release of radioactive material led to the contamination of the surrounding area.
- The Chernobyl disaster is considered one of the most serious nuclear accidents in the history of the world.

Case Study: Gulf War 1991 & Iraq War 2003

- The Gulf War (1991) and the Iraq War (2003) have caused significant environmental damage.
- Oil spills, deforestation, and the release of hazardous substances have contaminated the environment.
- The environmental damage caused by these wars is still being felt today.

3_Effects of military activities



EFFECTS OF MILITARY ACTIVITIES

Military Activities

Activity	Environmental Impact
Explosions	Release of toxic gases, heavy metals, and radioactive material.
Use of landmines	Contamination of soil and water.
Use of chemical and biological weapons	Release of toxic agents and pathogens.
Nuclear weapons testing	Release of radioactive material into the atmosphere.

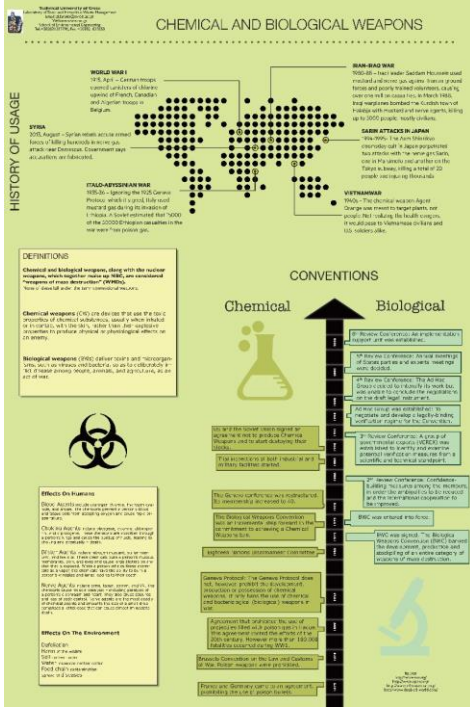
Chemical and Biological Weapons

Chemical weapons are toxic substances that are used to kill or incapacitate people. Biological weapons are pathogens that are used to cause disease and death.

Nuclear Weapons Testing

Nuclear weapons testing is the process of detonating nuclear weapons to demonstrate their military utility and to test the designs of new weapons. It has caused significant environmental damage.

4_Chemical and biological weapons



CHEMICAL AND BIOLOGICAL WEAPONS

HISTORY OF USAGE

- World War I:** First use of chemical weapons (mustard gas).
- World War II:** First use of biological weapons (bubonic plague).
- 1950s-1960s:** Development of chemical and biological weapons by the United States and the Soviet Union.
- 1980s:** Use of chemical and biological weapons by Iraq against Iran.
- 1989:** First use of chemical weapons in a conflict (Sarin gas in the Tokyo subway attack).
- 2001:** Use of biological weapons (anthrax spores) in the United States.

DEFINITIONS

Chemical Weapons: Toxic chemicals that are used to kill or incapacitate people.

Biological Weapons: Pathogens that are used to cause disease and death.

CONVENTIONS

Chemical Weapons Convention (CWC): A treaty that bans the development, production, stockpiling, and use of chemical weapons.

Biological Weapons Convention (BWC): A treaty that bans the development, production, stockpiling, and use of biological weapons.

5_Nuclear weapons

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NUCLEAR WEAPONS

ENVIRONMENTAL AND HEALTH EFFECTS

A nuclear weapon is any explosive device that derives its destructive force from nuclear reactions, either fission or a combination of fission and fusion, both involving the conversion of mass into energy. The atomic bomb ("Fat Man") bomb used in Nagasaki had a mass of energy approximately 20,000 tons of TNT. The first thermonuclear ("Mushroom") bomb exploded the same amount of energy as approximately 150,000 tons of TNT.

U.S. Discretionary Spending: Fiscal Year 2012

Military 25%

WORLD NUCLEAR FORCES, early 2012

Country	Number of warheads
United States	5,000
Russia	4,500
France	300
China	250
UK	225
India	120
Pakistan	100
North Korea	10
South Korea	0
Japan	0
Italy	0
Spain	0
Germany	0
Canada	0
Sweden	0
Poland	0
Czech Republic	0
Slovak Republic	0
Hungary	0
Slovenia	0
Belarus	0
Kazakhstan	0
Uzbekistan	0
Kyrgyzstan	0
Latvia	0
Lithuania	0
Estonia	0
Other	0

ENVIRONMENTAL EFFECTS

The physical effects of nuclear weapons are the result of the release of a large amount of energy in the form of heat, light, and sound. This energy is converted into a shock wave that travels outward from the point of detonation. The shock wave is the primary cause of the damage to buildings and other structures. The heat and light from the explosion cause fires and other damage to the surrounding area. The radiation from the explosion is also a significant hazard to humans and animals. The radiation can cause acute radiation sickness and can also increase the risk of cancer and other long-term health effects. The radiation can also have environmental effects, such as the destruction of forests and the contamination of soil and water.

HEALTH EFFECTS

The health effects of nuclear weapons are primarily due to the radiation released during the explosion. The radiation can cause acute radiation sickness and can also increase the risk of cancer and other long-term health effects. The radiation can also have environmental effects, such as the destruction of forests and the contamination of soil and water. The radiation can also have genetic effects, such as the mutation of genes and the increase in the risk of birth defects. The radiation can also have psychological effects, such as the development of post-traumatic stress disorder and other mental health problems.

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6_Conventional weapons

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Conventional weapons (arms)

Terminology and related Conventions

Weapons are relatively wide use that are not weapons of mass destruction (nuclear, biological, and chemical weapons). They include small arms and light weapons, sea and land mines, as well as bombs, shells, rockets, missiles, and cluster munitions. They use explosive material based on chemical energy as opposed to nuclear energy in nuclear weapons.

Disarmament: Dismantling Of Weapons And The Disposal Of Military Surplus

Conventional arms control has been linked to the European continent, most of a being established in the Conventional Arms Reduction (CFR) Treaty (1998).

Major Suppliers and recipients

Among the recipients, Asia, Europe, and the Middle East remain the most important centers of demand for major conventional weapons products.

Market share of top 5 arms exporters

United States, France, Germany, China, UK, and US are the major arms exporters.

Market share of top 5 arms importers

China, India, Pakistan, Iran, and Iraq are the major arms importers.

Scrapping of Conventional Ammunition

The largest amount of ammunition is held by the former Soviet Union governments. Russia has 50 million tons, China has 40 million tons, and the USA has 10 million tons. The rest of the world has about 200 million tons of ammunition.

Summary of the ammunition demilitarization stages

Process stage	Description
1. Transport	Compliance with dangerous goods or hazardous waste regulations that apply to the transportation of ammunition and explosives remaining for demilitarization
2. Storage until demilitarization	Compliance with relevant quality assurance standards
3. Manual unloading and preparation	Sorting and unloading
4. Preprocessing and dismantling	Separation of propellant, propellant, and ceramic residues of energetic material prior to removal
5. Energetics removal	Physical removal of energetic materials from their housing or casing
6. Energetics disposal (primary destruction)	Incineration or pyrolysis of energetic materials
7. Energetics disposal (secondary destruction)	Production of organic material from the explosives
8. Pollution control system	Compliance with regional or national environmental regulations covering noise, air, water, and land standards, as well as waste management and recovery

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7_War industry

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Cleaning Up The Mess warfare industry

Production

The production of chemical weapons is a highly complex and dangerous process. It involves the use of hazardous chemicals and the production of highly toxic and volatile substances. The production process is often carried out in secret facilities, and the resulting weapons are highly effective and difficult to detect. The production of chemical weapons is a major concern for the international community, as it poses a significant threat to global security and human health.

Storage

The storage of chemical weapons is a major challenge for the international community. The weapons are highly volatile and can be easily leaked or spilled, posing a significant risk to human health and the environment. The storage facilities must be highly secure and must have robust safety measures in place to prevent accidents and leaks. The international community has agreed on various conventions and treaties to regulate the storage and disposal of chemical weapons.

What are chemical weapons?

Chemical weapons are toxic chemicals that are used to kill or incapacitate people. They are highly volatile and can be easily leaked or spilled, posing a significant risk to human health and the environment. The production of chemical weapons is a highly complex and dangerous process, and the resulting weapons are highly effective and difficult to detect.

How do military dispose of chemical weapons?

The disposal of chemical weapons is a highly complex and dangerous process. It involves the use of hazardous chemicals and the production of highly toxic and volatile substances. The disposal process is often carried out in secret facilities, and the resulting weapons are highly effective and difficult to detect. The international community has agreed on various conventions and treaties to regulate the disposal of chemical weapons.

Disposal

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References

United Nations Convention on the Prohibition of Chemical Weapons (CWC)
Organization for the Prohibition of Chemical Weapons (OPCW)
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