

Report on Roundtable Discussion on

Incendiary Weapons and White Phosphorus: Understanding the Military Utility, Humanitarian Impact and Environmental Harm

Held on 28 May, 2024 at Norwegian People Aid in Oslo, Norway

INTRODUCTION

Incendiary weapons use heat and fire to kill and injure people, objects or the environment. There are more than 180 models of incendiary weapons, ranging from napalm, thermite, flamethrowers to white phosphorus, to name a few.¹ They cause particularly cruel injuries, such as severe and extensive burns that could be both chemical and thermal, which are painful, difficult to treat, and can . Incendiary weapons can also cause fires that get out of control, transferring from object to object and causing firestorms destroying wildlife and the environment, with impact on the climate as well.

White phosphorus (WP) in particular has been of interest to the humanitarian disarmament sector as its clear incendiary effect is being diminished by proponents of its alleged primary use as as smoke munition. White phosphorus has especially egregious impacts, causes chemical and thermal burns, often down to the bone and is difficult to extinguish as it burns when exposed to oxygen.²

Incendiary weapons continue to be used with civilian deaths and injuries as a result and current international law on incendiary weapons is inadequate. Protocol III of the Convention on Certain Conventional Weapons (CCW) has a narrow and inaccurate definition of incendiary weapons, disregarding its effects and further illogically regulates the use of incendiary weapons depending on whether they were air or ground launched; it does not prohibit them.

Given the grave humanitarian and environmental consequences of incendiary weapons which persist to present-day conflicts, combined with the lack of adequate international legal framework to address their impacts, we sought to increase the common understanding of incendiary weapons and particularly white phosphorus. To this end, we gathered humanitarian, legal, military, medical and environmental experts for a closed roundtable meeting.

RULES

The discussions were held under Chatham House Rule to provide space for an informal and honest discussion on the matter.

¹ NPA Weapons Policy. 2017.

² Ibid.

OBJECTIVE

The objective of the round-table discussion was to increase the understanding of the existing legal framework, military utility as well as the environmental and humanitarian effects of incendiary weapons, with a particular focus on white phosphorus munitions, through exchange of knowledge and experience between interdisciplinary global experts.

LEGAL FRAMEWORK: GAPS AND WAYS TO ADDRESS THEM

Overview

The discussion focused on International Humanitarian Law (IHL), the Convention on Certain Conventional Weapons (CCW) and its Protocol III, particularly addressing its effectiveness and limitations concerning the regulation of incendiary weapons. It examined the legal framework established by Protocol III, which aims to regulate the use of incendiary weapons, and proposed actions to address identified shortcomings.

Key Points

IHL and Protocol III of the CCW

- IHL prohibits targeting civilians and civilian objects, requiring parties to an armed conflict to distinguish at all times between the civilian population and combatants, and between civilian objects and military objectives, to avoid unnecessary harm. Failure to adhere to this principle results in indiscriminate attacks, which are prohibited and may constitute serious breaches of international law.
- The discussion highlighted that misinterpretations of principles of distinction and proportionality, increase the risk of violations and unlawful actions under IHL

Definition of Incendiary Weapons and its Limitations

- Protocol III defines incendiary weapons as those primarily designed to cause fire damage, excluding smoke and illuminants unless their incendiary effect is evident.
- The definition is considered inadequate and too narrow as it does not clearly cover multi-purpose incendiary munitions, with historical context reflecting concerns about airdropped incendiary weapons due to their devastating impact in World War II, such as the use of napalm.

Reservations and Controversies

- The U.S. has reservations to the Protocol, stating they will use incendiary weapons against military targets even if civilians are present, without clear limitations on civilian harm.
- This reservation has been rejected by 16 states parties, including U.S. allies.

Use of Specific Incendiary Weapons

- Flamethrowers: Noted for their psychological impact and brief firing duration; however, the legality of their use remains contested under IHL.
- White Phosphorus: Debated for its dual use as an illuminant and a weapon, with incidents such as the 2009 Gaza hospital attack that raise ethical concerns. The U.S. maintains its stance that it is primarily used for illumination.

- Fuel-Air Explosives/Vacuum Bombs: Not covered by Protocol III. Past proposals to regulate them have failed, and their use in modern conflicts, including by Russia, raises humanitarian concerns.

Proposals for Action

- Revising Protocol III: Suggestions include amending the current protocol or adopting a new one. However, the needed consensus of States Parties for amendments is challenging.
- Ban on White Phosphorus and Vacuum Bombs: These could be pursued outside the CCW framework due to opposition from key states.

Debates and Perspectives

- Illumination vs. Target Marking: Discussions questioned whether airburst or ground launched white phosphorus affects its role as an illuminant or target marker.
- Reservations and Convention Integrity: The U.S. reservation is seen as conflicting with the treaty's objectives, leading to a contentious situation where the treaty's effectiveness is undermined.

Conclusion

The discussion underscored the need for a more robust legal framework to address the use of incendiary weapons. It highlighted significant challenges in amending existing protocols or adopting new ones due to political resistance and differing interpretations of weapon use. Future efforts may involve separate processes to address these humanitarian issues more effectively.

HUMANITARIAN IMPACT OF INCENDIARY WEAPONS USE

Overview

The discussion centered on the use and regulation of incendiary weapons, emphasizing the humanitarian concerns surrounding their impact. Key points included historical context, recent usage, and the need for stronger legal frameworks to protect civilians and combatants.

Key Points

Scope and Advocacy

- Incendiary weapons, though less widespread than other weapon types, remain a significant issue in modern warfare. Human Rights Watch (HRW) has been active in advocating for stronger laws since their use by Israel in Gaza in 2009.
- HRW and other humanitarian disarmament civil society organisations, as well as some states have called for closing legal loopholes, especially concerning white phosphorus (WP), and suggested an absolute ban on incendiary weapons to enhance protection for both civilians and combatants.

Historical and Recent Use

- Historical instances of incendiary weapon use include the bombings of Tokyo and Dresden during World War II, and the use of napalm in Southeast Asia during the 1960s-70s.

- Recent data shows continued use by Russia and Syrian forces, with numerous attacks recorded in Syria and Ukraine. Incendiary weapons, including those with submunitions like the RBK-500, have been employed, revealing issues with the current legal distinctions under Protocol III.

Humanitarian Impact

- Incendiary weapons and WP cause severe injuries that extend beyond immediate military objectives, inflicting long-term suffering. They can lead to debilitating burns, airway damage, and several other acute and chronic health issues.
- Personal accounts from victims in Syria and Afghanistan illustrate the lifelong consequences of such injuries, including severe physical and psychological impacts, long-term disability, and social and economic challenges.

Legal and Strategic Considerations

- The discussion highlighted the extreme cruelty of using incendiary weapons, even against combatants, and argued for a complete ban due to their harmful effects.
- HRW has focused on improving civilian protection through CCW Protocol III but recognizes the challenge of achieving a total ban due to political difficulties.

Documentation and Research Challenges

- Accurate data on the use and impact of incendiary weapons is difficult to obtain, especially in conflict zones. Social media and remote evidence provide some insights, but comprehensive data from on-the-ground investigations remains limited.
- HRW faces challenges in documenting injuries and gathering detailed statistics due to restricted access in affected areas. Ongoing research aims to provide a clearer picture of the scale and impact of incendiary weapons.

Future Directions

- HRW and NPA are working on further investigations into the use and effect of incendiary weapons and WP by various actors, including the Israeli Defense Forces (IDF) in Gaza, Lebanon and Vietnam.
- Efforts include exploring the physical, psychosocial, and environmental effects of these weapons, with a focus on developing a more comprehensive understanding of their impact.

Conclusion

The discussion underscored the urgent need for stronger international regulations on incendiary weapons to prevent their harmful use and protect affected populations. Despite the challenges in obtaining detailed data and achieving political consensus, continued advocacy and research are essential to address the humanitarian issues associated with these weapons.

IMACTS ON THE HUMAN BODY AND MEDICAL TREATMENT

Overview

The report discusses the severe impact of burns and associated injuries, including the specialized medical care required and the challenges associated with treating burns caused by incendiary

weapons such as napalm and white phosphorus (WP). It highlights the complexity of these injuries, how resource-demanding their treatment is, the scarcity of specialized burn care facilities, and the need for coordinated research and knowledge exchange.

Key Points

Burn Injuries and Their Severity

- Severity: Burn injuries are categorized according to depth through or beyond the skin. Second- and third-degree burns, expected with temperatures above 45 and 60°C respectively, will directly disable a person from performing activities and require treatment, and often result in significant morbidity and mortality. The temperatures of incendiary weapons greatly exceed this.
- Care Requirements: Treatment for severe burns is complex, requiring individualized care over weeks, months or even years. Intensive care with fluid resuscitation, airway control, pain management and monitoring is often required, in addition to repeated surgeries and aggressive rehabilitation.

Challenges in Burn Medical Care

- Treatment Complexity: Burn injuries require comprehensive, specialized and resource-extensive treatment, often involving repeated surgeries and prolonged hospital stays. Burns caused by different incendiary weapons further have particular traits and associated risks that require special attention, which is not necessarily common knowledge among physicians without first-hand experience.
- Specialized Facilities: Burn care facilities are sparse in both high- and low-income country contexts, with only 49 centers across 44 countries in Europe. Norway only has one verified burn center with 8 beds. Many people live far from specialized care centers, complicating access to necessary treatment.

Impact of Specific Incendiary Weapons

- Napalm: These burns are often remarkably severe. Napalm causes second or third degree burns within seconds and often affects a large surface area, potentially leading to extensive skin damage, loss of consciousness and blood pressure, or death. Additionally, burning napalm can cause carbon dioxide and cyanide poisoning, both potentially lethal.
- White Phosphorus (WP): Results in deep, slow-healing wound cavities. Even minimal burns can be life-threatening due to the systemic absorption and toxicity of phosphorus. WP particles continue to burn until removed, necessitating abundant irrigation, soaked pads covering the wound and repeated surgical debridement to remove the particles.
- Both napalm and WP burns are commonly accompanied by blast and fragmentation injuries.

Comparison with Other Injuries

- Existing ICRC Analysis: Burn injuries from incendiary weapons are compared to bullet wounds and fragmentation injuries. While burn injuries primarily affect the skin, they can also cause systemic effects and require detailed medical evaluation to assess their full impact.
- Diagnostic Challenges: The challenges include both the difficulties for the physician treating the patient to recognize the injury, as well as the challenge of remote assessment to recognize/verify the cause of injury. Identifying burn injuries caused by specific incendiary

weapons like WP from battlefield photos or medical reports can be challenging. Distinctive features, such as deep cavity wounds, may help in diagnosis but require expert analysis.

Recommendations for Improvement of Medical Preparedness and Care

- Centralized Database: As medical research often cannot be a priority in conflict settings, establishing a centralized patient database for quality research is recommended for improving treatment and understanding of burn injuries caused by incendiary weapons.
- Knowledge Exchange: There is a need for better exchange of knowledge and practices with regards to handling the effects of incendiary weapons between military and health personnel.
- Conflict Preparedness and Protection: Awareness trainings should be conducted for both health personnel and civilians on how to manage these injuries.

Conclusion

Burn injuries from incendiary weapons pose significant challenges due to their severity, the complex and resource-demanding treatment required, and the limited availability of specialized treatment facilities. Specialized burn care is a limited resource, and even though many burn injuries can be treated outside specialized burn care facilities, every major burn injury is likely to be very resource demanding, with the care system very quickly being overloaded by burn patients.

Addressing these challenges requires increased investments in specialized health care for burn injuries, coordinated research efforts, and enhanced knowledge sharing among medical professionals and military personnel. Establishing standardized practices and centralized data collection can help mitigate the impact of these devastating injuries.

ENVIRONMENTAL HARM

Overview

Several reports address the extensive and possible long-lasting environmental damage caused by incendiary weapons, particularly white phosphorus (WP). For instance, the widespread impact on ecosystems, soil, water sources, and agriculture. However, there is a lack of evidence and data on the actual longer-term environmental impacts and highlights the need for improved documentation and legal frameworks to address these issues.

Key Points

Environmental Impact

- Toxicity: Incendiary weapons, including WP, are harmful to all organisms and can have severe consequences for soil, air, and water. They affect water sources where WP can be contained for decades, potentially contaminating them and impacting nearby populations and wildlife.
- Long-Term Effects: The environmental damage can persist for decades, as incendiary substances may reignite and continue to affect the environment long after their initial use. How WP contained in water might impact water quality and agriculture/soil is not well known.

Case Studies

- Nagorno-Karabakh, Syria, Ukraine, Lebanon, and Gaza: These regions have experienced significant environmental damage due to the use of incendiary weapons. Issues include forest

fires, contamination of water sources, destruction of soil, and impacts on food production and agriculture.

- Ukraine: Excessive use of WP is suspected to cause damage to soil and water resources, and impact biodiversity and agriculture.
- Lebanon: Over 300 forest fires are suspected to be caused by WP, affecting forests, olive trees, and impacting livelihoods and local climate just the last year.

Challenges in Documentation

- Data Collection Difficulties: Documenting the environmental impact of incendiary weapons faces challenges such as limited access to affected areas, difficulties in obtaining soil and water samples, and measuring the extent of the damage and lack of funding.
- Use of Satellite Data: Satellite imagery and open-source data have been instrumental in providing a better overview of environmental impacts, despite challenges in ground-level documentation.

Recommendations

- Increased Research and Documentation: There is a need for more comprehensive research to fully understand and document the environmental consequences of incendiary weapons.
- Legal Framework: Environmental provisions should be incorporated into existing legal frameworks to address and mitigate the long-term environmental damage caused by incendiary weapons.

Existing Evidence

- Early 2000s Report: Previous reports, such as one from the Institute of Water Research, led to recommendations for reducing incendiary fire risks by avoiding soft surfaces with water and focusing on hard surfaces instead.

Conclusion

The use of incendiary weapons are likely to result in significant and lasting environmental damage, affecting soil, water sources, and agriculture. Addressing these impacts requires improved research, documentation, and legal measures to mitigate long-term environmental harm. Enhanced access to data and integration of environmental protections into legal frameworks are essential steps toward managing and preventing such damage in the future.

MILITARY UTILITY OF WHITE PHOSPHORUS MUNITIONS

Purpose, utility and alternatives?

- **The technical functionality of WP munitions / how do they work?**
- **How are white phosphorus munitions used, with what objective and effect?**
- **Are there alternatives or could they be developed?**

Overview

White phosphorus (WP) munitions are primarily used to create smoke screens for obscuring vision and marking targets, but they also have incendiary effects. WP ignites on contact with air, producing dense smoke that can cause severe burns and respiratory issues. While effective for immediate tactical needs, WP's environmental and health impacts are significant, leading to soil and water contamination

and long-term health risks. Alternatives exist but are less effective or slower in action. The challenges of safely handling and disposing of unexploded WP munitions highlight the need for continued research and development of safer alternatives.

Key Points

Purpose and Utility

- Types of WP Munitions: WP is used in various forms including hand grenades, rifle grenades, mortars, artillery shells, aerial bombs, and rockets. It is widely utilized due to its immediate and effective smoke production.
- Functionality: WP munitions are primarily used for creating smoke screens to obscure enemy observation, mark targets, and provide cover for maneuvering troops. They can also be used in combination with high-explosive shells for enhanced impact and damage.

Technical Aspects

- Operation: WP munitions work by dispersing white phosphorus which ignites spontaneously upon contact with air, producing dense white smoke. This smoke can obscure vision and target areas and is used to cover friendly forces or mark positions.
- Chemical Reactions: WP reacts with moisture in the airways, causing respiratory issues and acid reactions. Its effectiveness and safety can be affected by environmental conditions such as humidity and temperature.

Alternatives and Limitations

- Current Alternatives: Other smoke-producing agents include red phosphorus, hexachloroethane, and titanium tetrachloride. However, these alternatives generally have slower activation times compared to WP, which provides instant smoke.
- Limitations: WP smoke is hot and can persist in the environment, requiring continuous deployment to maintain the smoke screen. Modern countermeasures have reduced the effectiveness of smoke screens, leading to a search for more advanced alternatives.

Environmental, Health and Safety Concerns

- Environmental Impact: WP can cause severe damage to soil and water, with persistent contamination and potential for reignition. This leads to long-term environmental impacts affecting agriculture and livelihoods.
- Health Risks: WP exposure can cause severe burn injuries, respiratory and systemic problems as described above. Its effects are exacerbated when WP munitions fail to detonate properly, leading to WP remnants that continue to pose risks.

Military Use and Tactical Considerations

- Strategic Use: WP is used for various tactical purposes including obscuring movement, marking targets, and in combination with high-explosive rounds for increased lethality. The effectiveness of WP is diminished by modern counter-smoke technologies and requires precise deployment.
- Future Developments: Replacing WP with new smoke technologies is challenging due to its widespread use and integration into existing weapon systems. Development of effective alternatives would require significant investment and research.

Handling and Disposal

- EOD Considerations: Explosive Ordnance Disposal (EOD) teams face challenges in dealing with unexploded WP munitions. WP can continue to burn or reignite, complicating disposal efforts. Identifying and safely neutralizing WP requires careful handling, often with special techniques to avoid accidental ignition.

Recommendations

- Improved Alternatives: Continued research into effective, less hazardous smoke-producing agents is recommended.
- Environmental Protections: Enhanced measures are needed to mitigate the environmental impact of WP and improve the safety and handling procedures for unexploded munitions.
- Data and Testing: More data on failure rates and effectiveness of WP munitions is necessary to better understand their impact and improve safety protocols.

Conclusion

WP munitions are a versatile tool for military operations, valued for their effective smoke production and tactical utility. However, their environmental and health impacts, coupled with challenges in handling and disposal, highlight the need for ongoing research into safer and more effective alternatives.

GAPS AND NEEDS

Approaches to reducing the harm caused by incendiary weapons and WP

- **What are our options?**
- **What is the problem? How big is it? Where is the problem? How to fix it?**

Overview

The use of incendiary weapons and white phosphorus (WP) poses severe ethical and humanitarian challenges due to their potential for indiscriminate harm and uncontrollable fires. Addressing these issues requires a detailed understanding of their usage, impact, and the global response to these weapons.

Key Points

Ethical Concerns

- The deployment of incendiary weapons and WP can cause severe and indiscriminate harm, raising fundamental questions about their use in warfare. The unpredictable nature of fires started by these weapons often leads to widespread and uncontrollable damage.

Evidence and Data Gaps

- There is a need for comprehensive evidence on the scale of the problem, including data on the use, production, stockpiling, and rejection of these weapons. Current knowledge is insufficient, with incomplete data on casualties and the full humanitarian impact.

Global Response

- While many countries have banned the use of incendiary weapons, a clear understanding of their global use and the extent of their impact remains lacking. For instance, the 2009 Gaza conflict highlighted significant casualties, but detailed and comprehensive data is still needed.

Conclusion

Addressing the humanitarian and ethical issues associated with incendiary weapons and WP requires improved data collection and documentation. A clearer picture of their use, impact, and global response is crucial for informing policymakers and the public, ultimately guiding more effective measures to mitigate the harm caused by these weapons.

NEXT STEPS

What can we learn from previous processes on weapons-related issues?

- **The disarmament precedent and how it could apply to WP/IW**
- **Practical steps for advancing civilian protection, who are our allies and who can do what?**

Overview

Addressing the challenges associated with incendiary weapons (IW) and white phosphorus (WP) involves exploring various avenues based on past disarmament efforts and current practices. These include legal, political, military, and financial interventions to enhance civilian protection and advance disarmament. The discussion identifies key areas for potential intervention and emphasizes the importance of a multi-faceted approach involving diverse stakeholders.

Key Points

Legal Approaches

- Current Status: Legal avenues, such as Protocol 3 of the Convention on Certain Conventional Weapons (CCW), are seen as less promising without significant momentum. The focus should be on tightening regulations related to the use of incendiary weapons in densely populated areas, although this may not fully address the weapons' inherent issues.
- Future Directions: There is a need to consider new legal frameworks or adaptations to existing ones, possibly including effect-based definitions to cover various incendiary uses.

Political Strategies

- Lessons Learned: Past successes in disarmament, such as the bans on landmines and cluster munitions, were driven by public awareness and political resolutions. Similar strategies could be applied to IW and WP.
- Proposals: Increase the number of states that formally renounce the use of these weapons, leveraging high-profile cases and media attention to build support. Establish a core group of countries committed to advancing this agenda.

Military Perspectives

- Alternative Solutions: Explore less harmful alternatives for achieving similar military objectives. Encourage military stakeholders to adopt best practices that minimize harm and consider restricting the use of IW.
- Challenges: Budget constraints and entrenched military practices may hinder progress, but there is potential for developing and implementing less damaging alternatives.

Financial Measures

- Investment Strategies: Encourage ethical investment practices by targeting companies involved in the production of IW and WP. Highlight successful cases where companies ceased production due to ethical concerns.
- Potential Impact: Use financial pressure to drive changes in production and investment patterns, promoting broader disarmament efforts.

Conclusion

Incendiary weapons, including white phosphorus munitions, cause unacceptable harm to civilians, combatants and the environment. **There is clear humanitarian impact and potential environmental consequences due to the use of incendiary weapons and white phosphorus munitions.** The environmental impacts need further research and documentation.

Military utility of particularly of white phosphorus munitions is limited and can most likely be substituted by other similar and less harmful weapons for smoke, marking and tracing purposes. Incendiary weapons, including white phosphorus munitions, are not used for illumination in military operations, thus this argumentation is redundant.

Progress in addressing the pressing issues surrounding IW and WP requires a consistent and coordinated effort between militaries, states and civil society, especially involving legal, political, military, and financial strategies.

There is little potential in amending Protocol III of CCW, as the forum is locked by consensus. Drawing on lessons from past disarmament successes, **the focus should be on building momentum towards a separate comprehensive ban on all incendiary weapons, including white phosphorus munitions.** This should be done through a coordinated civil society approach, public awareness campaigns, political engagements, and targeted financial actions. **Involving a core group of committed states and leveraging civil society will be critical in advancing these goals and achieving meaningful change.**

END.