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**Regulation of White Phosphorus Weapons  
in International Law**

Stian Nordengen Christensen



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**Stian Nordengen Christensen**

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# Regulation of White Phosphorus Weapons in International Law

Stian Nordengen Christensen\*

## 1. Introduction

### 1.1. Aims of the Paper

The aim of this paper is to clarify how white phosphorus ('WP') weapons are regulated under international law, particularly in regard to the main applications of WP weapons as a means of warfare. I will discuss the status of WP weapons and its main applications in general terms in relation to the Chemical Weapons Convention (1993), the Convention on Certain Conventional Weapons (1980) and customary international humanitarian law.<sup>1</sup> If it becomes evident that there is significant disagreement and lack of clarity about the legal regulations of WP weapons – or if it seems there may be a significant gap between the actual legal regulations and the opinion about WP weapons among States or in the general public – then I will also briefly comment on how this gap may be closed through treaty regulation in the future.

I will not discuss the relevance of the international regulations on poison and poison gas, which feature in some of the legal analyses of WP

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<sup>1</sup> Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction, 1993 (<http://www.legal-tools.org/doc/fc1928/>); Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects, 1980 (<http://www.legal-tools.org/doc/fc1928/>).

weapons.<sup>2</sup> There are two reasons for this: First, there is a need to limit the scope of this paper. Second, there does not seem to be any significant disagreement that WP weapons do not fall under the definitions of poison or poisonous gas in the relevant conventions.<sup>3</sup>

I will use some specific historical cases to exemplify the application of WP weapons, most importantly the use of WP by the US military in Fallujah in 2004 and by the Israeli military in Gaza 2008-2009 (*Operation Cast Lead*). These are important examples of how WP has been used as a means of warfare in the past decade. I will not, however, attempt to draw conclusions about the legality of these concrete examples. The reason is that I attempt to comment in this paper on the regulation of WP weapons in general, not in specific cases.

## 1.2. Literature

The most cited article in this paper is I.J. MacLeod and A.P.V. Rogers' "The Use of White Phosphorus and the Law of War" (2007).<sup>4</sup> One of the authors is a legal expert and the other holds a Ph.D. in pathology as well as an LL.M. in international law, which lends credibility to the arguments of the article also as far as the medical conclusions are concerned.<sup>5</sup> The immediate backdrop of the article is the use of WP in Fallujah (Iraq) in 2004 and in Lebanon in 2006. The article comments on the specific applications in these two conflicts, but mainly deals with the international regulation of WP in general.

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<sup>2</sup> I.J. MacLeod and A.P.V. Rogers, "The Use of White Phosphorus and the Law of War", in *Yearbook of International Humanitarian Law*, 2007, vol. 10, pp. 79–82; Joseph D. Tessier, "Shake & Bake: Dual-Use Chemicals, Contexts, and the Illegality of American White Phosphorus Attacks in Iraq", in *Pierce Law Review*, 2007, vol. 6, no. 2, pp. 326–327; Steven Haines, "Weapons, Means and Methods of Warfare", in Elisabeth Wilmshurst and Susan Breau (eds.), *Perspectives on the ICRC Study on Customary International Law*, Cambridge University Press, Cambridge, 2007, p. 259.

<sup>3</sup> The relevant conventions are the following: Declaration on the Use of Projectiles the Object of Which is the Diffusion of Asphyxiating or Deleterious Gases, The Hague, 29 July 1899 (<http://www.legal-tools.org/doc/b025b9/>); Convention (IV) Respecting the Laws and Customs of War on Land and the annexed Regulations Respecting the Laws and Customs of War on Land, The Hague, 18 October 1907 (<http://www.legal-tools.org/doc/fa0161/>); and Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, Geneva, 17 June 1925 (<http://www.legal-tools.org/doc/a68438/>).

<sup>4</sup> MacLeod and Rogers, 2007, see *supra* note 2.

<sup>5</sup> *Ibid.*, p. 75. Authors' background in fn. 1.

I also frequently cite Roman O. Reyhani's article, "The Legality of the Use of White Phosphorus by the United States Military during the 2004 Fallujah Assaults" (2007), and Joseph D. Tessier's article "Shake & Bake: Dual-Use Chemicals, Contexts, and the Illegality of American White Phosphorus Attacks in Iraq" (2007).<sup>6</sup> Both deal mainly with the use of WP in Fallujah, but also make observations about the relevant international legal framework in general. Reyhani's article, in particular, contains certain viewpoints that deviate from those of MacLeod and Rogers.

There are voluminous works dealing with the law of armed conflict in general which could be cited in this paper. For obvious practical reasons, it has been necessary to limit this number. I refer mainly to the treatment of WP in Yoram Dinstein's *The Conduct of Hostilities under the Law of International Armed Conflict* and Gary D. Solis' *The Law of Armed Conflict*.<sup>7</sup> Both treatments of WP are short but concise and informative, and clearly express views that I compare with those of the above-mentioned.

Certainly, no treatment of the law of armed conflict can ignore the 2005 study by Jean-Marie Henckaerts, Louise Doswald-Beck *et al.*, *Customary International Humanitarian Law*, which presents a comprehensive set of rules of customary international humanitarian law.<sup>8</sup> This study (hereafter "The 2005 ICRC Study") is widely regarded today as the standard reference work of customary international humanitarian law. It is central in this paper's treatment of the rules that may be relevant for WP weapons.

I also make use of the report by Human Rights Watch on Operation Cast Lead in Gaza, *Rain of Fire: Israel's Unlawful Use of White Phos-*

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<sup>6</sup> Roman O. Reyhani, "The Legality of the Use of White Phosphorus by the United States Military during the 2004 Fallujah Assaults", in *bepress Legal Series*, Paper 1959, Berkeley Electronic Press, 2007, available at <http://law.bepress.com/expresso/eps/1959>. Unless otherwise stated, URLs in this paper were last accessed on 17 August 2016. PURLs in the ICC Legal Tools Database are permanent so there is no need to indicate a date of access.

<sup>7</sup> Yoram Dinstein, *The Conduct of Hostilities under the Law of International Armed Conflict*, Second Edition, Cambridge University Press, Cambridge, 2010; Gary D. Solis, *The Law of Armed Conflict: International Law in War*, Cambridge University Press, Cambridge, 2010.

<sup>8</sup> Jean-Marie Henckaerts and Louise Doswald-Beck, with contributions from Carolin Alvermann, Knut Dörmann and Baptiste Rolle, *Customary International Humanitarian Law*, vol. I: "Rules", International Committee of the Red Cross, Cambridge University Press, 2005.

*phorus in Gaza* (2009).<sup>9</sup> This report is an attempt at an objective investigation into the use of WP weapons in Gaza, but it has been subjected to strong criticism, particularly from Israeli officials.<sup>10</sup> However, the report documents important facts about the use of WP in a specific military context – with pictures of such use – and makes statements about the legal status of WP weapons that are of interest to this paper. Another report of interest is the so-called “Goldstone report”, which is the report of a commission mandated by the United Nations Human Rights Council to investigate Operation Cast Lead in Gaza.<sup>11</sup> This too, has been heavily criticised by the Israeli government and others.<sup>12</sup> It was, however, endorsed by the majority of the Human Rights Council.<sup>13</sup> It contains important expert views about the legality of WP weapons.

As regards the medical information, I have relied on information published in medical journals, particularly a case report on a patient with WP burns, published in *The Lancet* (2010), and an article about burn injuries during armed conflicts, published in the *Annals of Burns and Fire Disaster* (2007).<sup>14</sup>

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<sup>9</sup> Human Rights Watch, *Rain of Fire: Israel’s Unlawful Use of White Phosphorus in Gaza*, Human Rights Watch, New York, 2009 (<http://www.legal-tools.org/doc/7b9115/>).

<sup>10</sup> Guy Azriel, “Israel, Hamas investigations into Gaza incursion lacking”, in *CNN Report*, 11 April 2010. Yigal Palmor, spokesman for the Israeli Foreign Ministry, is reported to have said that “[...] Human Rights Watch got their facts and figures wrong” and displayed a “[...] lack of professional integrity and they are therefore not to be taken as an authority to judge and evaluate IDF operations”.

<sup>11</sup> Richard Goldstone et al., *Human Rights in Palestine and Other Occupied Arab Territories: Report of the United Nations Fact-Finding Mission on the Gaza Conflict*, A/HRC/12/48, 25 September 2009 (<http://www.legal-tools.org/doc/ca9992/>).

<sup>12</sup> Danna Harman, “Goldstone panel colleagues rebut judge’s mea culpa”, in *Ha’aretz*, 15 April 2011, available at <http://www.haaretz.com/print-edition/news/goldstone-panel-colleagues-rebut-judge-s-mea-culpa-1.356045>. Yigal Palmor, a spokesman for the Foreign Ministry, is reported to have said about the Goldstone report that “[t]he whole process was deeply tainted by political bias and an extremist dominance over the U.N. Human Rights Commission by nondemocratic countries”.

<sup>13</sup> UN Human Rights Council resolution A/HRC/RES/S-12/1, 12th Session, 16 October 2009, part B, operative paragraph 3 (<http://www.legal-tools.org/doc/a2fd0e/>).

<sup>14</sup> Loai Nabil Al Barqouni, Sobhi I. Skaik, Nafiz R. Abu Shaban, Nabil Barqouni, “Case Report: White Phosphorus Burn”, in *The Lancet*, 2010, vol. 376, p. 68; B.S. Atiyeh, S.W.A. Gunn, S.N. Hayek, “Military and Civilian Burn Injuries during Armed Conflicts”, in *Annals of Burns and Fire Disasters*, December 2007, vol. XX, no. 4, available at [http://www.medbc.com/annals/review/vol\\_20/num\\_4/text/vol20n4p203.asp](http://www.medbc.com/annals/review/vol_20/num_4/text/vol20n4p203.asp). *The Lancet* is one of the world’s most respected, oldest and leading medical journals.

Finally, I cite several newspaper articles in this paper. These are used to provide facts about specific situations and viewpoints where relevant, and as indications of the view of States and the general public on certain relevant issues.

### **1.3. Structure of the Paper**

Chapter 2 describes the most important attributes, military applications and medical effects of WP, and also presents a brief historical background. These facts form the basis for the discussion in the succeeding chapters, which deal with the legal issues connected with regulation of WP weapons that may be contained in relevant conventions or in relevant rules of customary international humanitarian law. In chapter 3, I discuss how WP weapons may be regulated by the Chemical Weapons Convention, as toxic chemicals or riot control agents. In chapter 4, I discuss how WP weapons may be regulated in the Convention on Certain Conventional Weapons, specifically Protocol III on incendiary weapons. In chapter 5, I discuss how certain rules of customary international humanitarian law may apply to WP weapons. I specifically focus on (1) the principle of no unnecessary suffering or superfluous injury, (2) the principle of distinction between civilian and military targets, and (3) the Martens Clause.

Chapter 6 presents general comments on the legality of WP weapons and its main applications, based on the conclusions of the previous chapters. Finally, chapter 7 discusses briefly whether there may be a case for stronger international regulation of WP weapons.

## 2. White Phosphorus: Military Applications and Medical Effects

### 2.1. What are White Phosphorus Weapons?

WP is a common chemical substance, which has both military and non-military applications. In the latter category, one can find WP used in fireworks, food additives, fertilisers, and cleaning compounds, to mention a few.<sup>15</sup> In the former category, WP is primarily used to provide smoke or as an incendiary, that is, to set fire to objects or persons. A case report in the medical journal *The Lancet* describes WP as follows:

White phosphorus is a smoke-producing, waxy, yellow transparent combustible solid, which is used mainly in military and industrial settings. In the presence of oxygen, it spontaneously ignites with a yellow flame and produces dense smoke; it extinguishes only when deprived of oxygen or totally consumed. On contact with exposed skin, white phosphorus produces painful chemical burns.<sup>16</sup>

There are three common types of WP-containing projectiles: (1) Flares on parachutes for illumination of roads, (2) canisters that fall on the ground, burn and emit smoke for smoke screens – or eject wedges saturated with WP that fall to the ground in an elliptical pattern and eject smoke, and (3) burster rounds, either with point detonating fuse or a time fuse, set to burst at a given height above the ground – these burn with intense heat and emit dense white smoke.<sup>17</sup> WP weapons can be in the form of aerial-delivered bombs, artillery shells, and grenades. WP ignites spontaneously in air at 44 degrees Centigrade (111.2 degrees Fahrenheit) and produce flames of 800 degrees Centigrade, up to 816 degrees Centigrade when it is in contact with oxygen (1,501 degrees Fahrenheit).<sup>18</sup> In Operation Cast Lead, the Israeli military mostly used 155 millimetre artillery shells, which air-bursts and spreads 116 wedges totalling 5.78 kilos of WP in a radius up to 125 meters.<sup>19</sup>

For the purpose of this paper, I concentrate on five main modes of application of WP weapons. These modes of applications share two im-

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<sup>15</sup> Reyhani, 2007, p. 16, see *supra* note 6.

<sup>16</sup> Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14.

<sup>17</sup> MacLeod and Rogers, 2007, pp. 76–77, see *supra* note 2.

<sup>18</sup> Atiyeh *et al.*, 2007, see *supra* note 14.

<sup>19</sup> Human Rights Watch, 2009, pp. 3 and 11, see *supra* note 9.

portant characteristics, namely that the munitions *burst* and that they have at least the potential to cover wider areas with WP fragments:

1. *Use of bursting WP for creation of a smoke screen/as an obscurant.* WP is considered ideal for this purpose, as it almost instantaneously produces a dense white smoke that can obscure military movements.<sup>20</sup> In this category I also include the use of WP for protection against infra-red tracking systems.<sup>21</sup> The obscurant function of WP is possibly the most common.<sup>22</sup> General Peter Pace, as chairman of the US Joint Chiefs of Staff, has said the obscurant function of WP was one of two main functions, the other being to mark a target.<sup>23</sup>
2. *Use of WP burster rounds for illumination.* WP can be used to illuminate a battlefield at night.<sup>24</sup> Illumination can be achieved in two ways: First, WP flares can be attached to parachutes and, second, rounds can be designed to burst in the air and eject burning WP.<sup>25</sup> I will not discuss the former category in this paper because it is technically quite remote from the other applications that I discuss. The optimal air-burst altitude for the burster rounds for illumination is 500 meters above ground, which should be high enough for there to be little danger of burning fragments hitting individuals on the ground.<sup>26</sup>
3. *Use of WP for marking a target.* This function may include marking for assisting in range-finding and/or in preparing subsequent strikes from the air or the ground.<sup>27</sup>
4. *Use of WP for “flushing out” combatants.* This refers to the controversial tactic where WP rounds are fired into confined spaces where enemy combatants are taking cover, in order to drive them out and then rendering them *hors de combat* with other weapons. The tactic

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<sup>20</sup> MacLeod and Rogers, 2007, p. 76, see *supra* note 2.

<sup>21</sup> Human Rights Watch, 2009, p. 2, see *supra* note 9.

<sup>22</sup> Reyhani, 2007, p. 17, see *supra* note 6.

<sup>23</sup> American Society of International Law, “U.S. Defends Use of White Phosphorus Munitions in Iraq”, in *The American Journal of International Law*, April 2006, vol. 100, no. 2, p. 487.

<sup>24</sup> MacLeod and Rogers, 2007, p. 76, see *supra* note 2.

<sup>25</sup> *Ibid.*, pp. 76–77.

<sup>26</sup> *Ibid.*, p. 77.

<sup>27</sup> *Ibid.*, p. 76; American Society of International Law, 2016, p. 487, see *supra* note 23.

was applied by the US military in Fallujah in 2004, but also in World War II and in the Falklands war.<sup>28</sup> The tactic is often referred to as “shake and bake”, owing to the jargon of US military personnel who have described their use of WP in Fallujah.<sup>29</sup>

5. *Use of WP for incendiary purposes*, that is, setting fire to persons or objects.<sup>30</sup>

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<sup>28</sup> Tessier, 2007, pp. 347–348, see *supra* note 2.

<sup>29</sup> Reyhani, 2007, p. 10, see *supra* note 6; Solis, 2010, p. 598, see *supra* note 7.

<sup>30</sup> MacLeod and Rogers, 2007, p. 76, see *supra* note 2; Solis, 2010, p. 598, see *supra* note 7. Solis writes that the primary uses of white phosphorus are to produce a smoke screen, provide illumination, and for incendiary purposes.



**Image 1**<sup>31</sup>



White phosphorus artillery is air-burst over Gaza during Operation Cast Lead. Each shell contains 116 felt wedges which can fall over an area up to 250 meters in diameter. © 2009 Getty Images

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<sup>31</sup> Human Rights Watch, 2009, p. 23, see *supra* note 9.

## 2.2. Effects of White Phosphorus on Humans

When in contact with human skin, WP causes both chemical and thermal burns.<sup>32</sup> While the thermal burns are caused by the generated heat, the chemical burns result from several different compounds that are produced through chemical reactions. This includes the production of phosphorus pentoxide, which can react with the water in skin and produce corrosive phosphoric acids.<sup>33</sup> There is no doubt that WP burns on human tissue can cause serious damage to internal organs, possibly death.<sup>34</sup> WP chemical burns can cause damage deep into underlying tissues, resulting in delayed healing.<sup>35</sup> In the case of burn wounds, WP can be absorbed systemically in the body, leading to multiple organ dysfunction syndrome, because of the effect it has on erythrocytes, kidneys, liver, and heart.<sup>36</sup> WP burns are associated with significant morbidity, and often necessitate lengthy hospital stays.<sup>37</sup>

A medical case report from Gaza describes the treatment of a patient with WP burns: An 18-year old man came to be treated in the emergency department after an attack with an incendiary shell. He was diagnosed with WP burns, covering 30 percent of his body. One day after admission to the burns unit, white smoke was noticed emanating from the wounds, and he was transferred to the operating room for removal of WP particles. During the procedure, some WP particles were accidentally dislodged and resulted in a superficial burn on a nurse's neck. The patient was discharged after eight days.<sup>38</sup> The risk of re-ignition of WP in wounds is significant, since any remaining WP will re-ignite when re-exposed to oxygen.<sup>39</sup>

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<sup>32</sup> Federation of American Scientists, "White Phosphorus Fact Sheet", available at <http://www.fas.org/programs/bio/factsheets/whitephosphorusfactsheet.html>; Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14; R. Seth, D. Chester, and N. Moiemmen, "A review of chemical burns", in *Trauma*, 2007, vol. 9, p. 87.

<sup>33</sup> Federation of American Scientists, "White Phosphorus Fact Sheet", see *supra* note 32.

<sup>34</sup> Human Rights Watch, 2009, p. 3, see *supra* note 9.

<sup>35</sup> Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14; ICRC, Weapons that may Cause Unnecessary Suffering or Have Indiscriminate Effects: Report on the Work of Experts, 1973, ICRC, Geneva, p. 63 (para. 218).

<sup>36</sup> Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14.

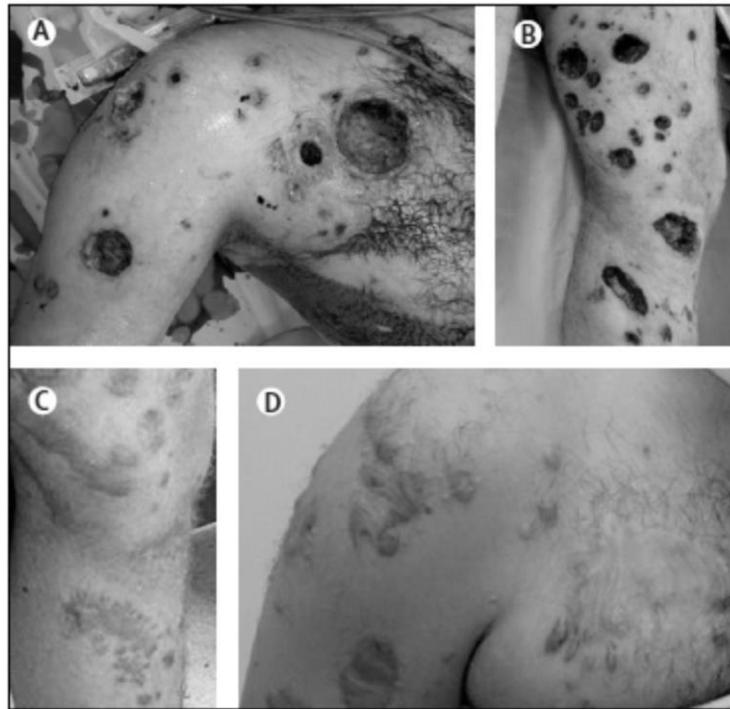
<sup>37</sup> *Ibid.*

<sup>38</sup> *Ibid.*

<sup>39</sup> Atiyeh *et al.*, 2007, p. 3, see *supra* note 14.

The medical case report included photos of some of the patient's wounds:

**Image 2**<sup>40</sup>



**Figure: White phosphorus burn**  
Many lesions, with severe underlying destruction and necrosis in the right shoulder (A) and left leg (B). After 16 months of follow-up (C, D).

Inhalation of WP smoke is also hazardous to humans. Combustion of WP results in the formation of phosphorus pentoxide, which is a severe pulmonary irritant. In a closed space, this may reach concentrations sufficient to cause acute inflammatory changes in the tracheobronchial tree (that is, the human airways).<sup>41</sup>

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<sup>40</sup> Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14.

<sup>41</sup> Atiyeh *et al.*, 2007, see *supra* note 14.

### 2.3. A Brief Military History of White Phosphorus

WP was used as a means of warfare in World War I and World War II.<sup>42</sup> According to one source, there were calls to ban WP already after World War I, because of the painful falling burning fragments.<sup>43</sup> It was also used by the Russian Military in Grozny, Chechnya, in 1994.<sup>44</sup> The military application of WP may be on the increase in the twenty-first century, seeing how it has featured in many recent conflicts.<sup>45</sup> Ethiopia was accused by UN arms monitors of using WP against both insurgents and civilians in Somalia in 2007.<sup>46</sup> According to the Israeli daily *Ha'aretz*, Israeli officials have admitted use of WP directly against Hezbollah in 2006.<sup>47</sup>

WP seems to be used by a range of States' military forces, and also by non-State actors. Iraqi dissidents have claimed that it was used by the Iraqi government in Nasiriya in March 1994, where Ali Hassan Al Majid (Chemical Ali) used WP and napalm to set fire to civilian houses.<sup>48</sup> As far as non-State actors are concerned, it is noteworthy that, according to Israeli police, Hamas fired a WP shell in the direction of Sderot in Israel on 14 January 2009.<sup>49</sup> In Afghanistan, both the foreign troops and the Taliban have made use of WP. Colonel Gregory Julian, spokesman for the commander of US and NATO forces in Afghanistan, has said foreign troops in the country use WP munitions for illumination and as incendiary to destroy enemy equipment and bunkers.<sup>50</sup> The US military have accused Taliban for extensive use of WP in attacks against US forces and in civilian areas.<sup>51</sup>

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<sup>42</sup> MacLeod and Rogers, 2007, p. 77, see *supra* note 2.

<sup>43</sup> Ian Sample, "What is white phosphorus?", in *The Guardian*, 19 November 2005.

<sup>44</sup> Tessier, 2007, pp. 349–350, see *supra* note 2.

<sup>45</sup> MacLeod and Rogers, 2007, p. 78, see *supra* note 2.

<sup>46</sup> *Ibid.*, citing "US, Ethiopia accused over Somalia", in *The Financial Times*, 27 July 2007.

<sup>47</sup> MacLeod and Rogers, 2007, p. 77, see *supra* note 2.

<sup>48</sup> Tessier, 2007, p. 354, see *supra* note 2.

<sup>49</sup> Human Rights Watch, 2009, p. 14, see *supra* note 9. Human Rights Watch questions the claim.

<sup>50</sup> Paul Tait (ed.), "Key facts about white phosphorus munitions", in *Reuters News*, 8 May 2009.

<sup>51</sup> Jason Straziuso, "US military: 44 Afghan cases of white phosphorus", in *Associated Press*, 11 May 2009; Michael Evans, "Taliban using British white phosphorus: US papers show banned material was found across Afghanistan", in *The Times*, 12 May 2009.

The two most discussed events involving use of WP in the past decade are the use by the US military in Fallujah, Iraq, in April and November 2004, and the use by the Israeli military in Gaza in 2009. The controversy over the use of WP in Fallujah is the immediate *raison d'être* for some of the articles to which I refer the most in this paper.<sup>52</sup> Pentagon spokesman Lt. Col. Barry Venable has described the use of WP in Fallujah in the following manner:

When you have enemy forces that are in covered positions [...] one technique is to fire a white phosphorus round into the position because the combined effects of the fire and smoke—and in some cases the terror brought about by the explosion on the ground—will drive them out of the holes so that you can kill them with high explosives.<sup>53</sup>

This tactic, which involved the use of WP at least indirectly against enemy combatants with lethal effect, sparked significant international criticism in 2005, after Italian public television showed a documentary that renewed persistent charges concerning the United States' use of WP rounds.<sup>54</sup> The US government has dismissed accusations that WP was used illegally.<sup>55</sup>

The use of WP by the Israeli military in Gaza has also been heavily criticised both during and after the event.<sup>56</sup> Human Rights Watch has accused the Israeli of using WP over populated areas in violation of international humanitarian law.<sup>57</sup> The report from a UN Human Rights Council probe into the military operation in Gaza – the so-called Goldstone report – also heavily criticised the Israeli use of WP.<sup>58</sup> The Israeli government has confirmed its use of WP, but denied the

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<sup>52</sup> MacLeod and Rogers, 2007, p. 76, see *supra* note 2. Tessier, 2007, pp. 324–325, see *supra* note 2. Reyhani, 2007, p. 10, see *supra* note 6.

<sup>53</sup> Tessier, 2007, p. 324, see *supra* note 2, citing “U.S. Forces Used ‘Chemical Weapon’ in Iraq”, in *The Independent*, 16 November 2005.

<sup>54</sup> Scott Shane, “Defense of Phosphorus Use Turns Into Damage Control”, in *The New York Times*, 21 November 2005. See also Tessier, 2007, p. 340, see *supra* note 2.

<sup>55</sup> See, for example, American Society of International Law, 2006, p. 487, see *supra* note 23.

<sup>56</sup> On the media coverage during the military operation, see Sheera Frenkel, “Israel backs down over white phosphorus”, in *The Times*, 23 April 2009.

<sup>57</sup> Human Rights Watch, 2009, p. 1, see *supra* note 9.

<sup>58</sup> Goldstone *et al.*, 2009, para. 48, see *supra* note 11.

accusations that it was systematically used in an illegal manner, stressing its use as an obscurant.<sup>59</sup>

### 3. White Phosphorus and the Chemical Weapons Convention

The following discussion will be divided into two parts. First, I discuss whether WP weapons fall in the category of “toxic weapons” as defined in the Chemical Weapons Convention, as well as whether and to what extent the common uses of WP weapons are regulated by this convention. Second, I discuss whether WP weapons fall in the category of “Riot Control Agents”, as defined in the Chemical Weapons Convention, and whether and to what extent the uses of WP weapons are regulated as such.

#### 3.1. Is White Phosphorus a Toxic Chemical?

The 1993 Chemical Weapons Convention prohibits the use of chemical weapons in all circumstances. The ban is total, including not only the use of such weapons, but acquisition, stockpiling and transferral.<sup>60</sup> The definition of a “chemical weapon” is found in Article II(1)(a) through (c), but only Article II(1)(a) is relevant to the discussion of WP. The definitions in article II(1)(b) and (c) state that for the toxic chemical to fall under the definition of a chemical weapon, it must be “specifically designed” to cause harm or death as a result of the chemical component. One would be hard pressed to say that WP weapons are specifically designed for such purposes, and it thus falls outside the definition in (b) and (c).<sup>61</sup>

Article II(1)(a), however, defines a chemical weapon as: “Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes”.<sup>62</sup> The *application* of the chemical is important: The definition in Article II(1)(a) excludes toxic chemicals that are applied in a manner not prohibited under the Chemical Weapons

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<sup>59</sup> James Hider and Sheera Frenkel, “Israel admits using white phosphorus in attacks on Gaza”, in *The Times*, 24 January 2009.

<sup>60</sup> Chemical Weapons Convention, Article I (1)(a) through (b), see *supra* note 1.

<sup>61</sup> The same conclusion is reached by MacLeod and Rogers, 2007, p. 87, see *supra* note 2.

<sup>62</sup> Chemical Weapons Convention, Article II (1)(a), see *supra* note 1.

Convention. What is meant in this regard is the *potential* use of the weapon, not its purpose of *design*.<sup>63</sup>

“Toxic chemical” is defined in Article II(2):

Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals. This includes all such chemicals, regardless of their origin or of their method of production, and regardless of whether they are produced in facilities, in munitions or elsewhere.

A “precursor” of a toxic chemical is defined in Article II(3): “Any chemical reactant which takes part at any stage in the production by whatever method of a toxic chemical”.

WP is not mentioned in the annex to the Chemical Weapons Convention, where some of the chemicals prohibited are listed. The annex is not exhaustive, however, and only includes those chemicals that have been identified for the application of verification measures in the Convention.<sup>64</sup>

There is no disagreement that WP has toxic properties when it causes chemical burns on human skin. Tessier concludes that it is “well established” that WP causes chemical burns that may cause system toxicity or death if not treated.<sup>65</sup> MacLeod and Rogers reach the same conclusion.<sup>66</sup> In their line of argumentation, they cite the NATO Handbook on emergency war surgery, which states that WP burns result in a “vastly increased mortality rate” among animal models, compared to non-phosphorus burns.<sup>67</sup> Moreover, studies on individuals accidentally burned by WP have shown that dermal exposure can result in kidney and liver abnormalities.<sup>68</sup> Solis, although arguing that WP weapons are not chemical weapons, also concludes that WP has toxic properties.<sup>69</sup>

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<sup>63</sup> MacLeod and Rogers, 2007, p. 87, see *supra* note 2.

<sup>64</sup> Chemical Weapons Convention, Article II(2) and (3), see *supra* note 1.

<sup>65</sup> Tessier, 2007, p. 352, see *supra* note 2.

<sup>66</sup> MacLeod and Rogers, 2007, p. 90, see *supra* note 2.

<sup>67</sup> *Ibid.*, pp. 89–90, citing *NATO Handbook, Emergency War Surgery*, Part I, Chapter II, US Govt. Printing Office, Washington, D.C., February 1988.

<sup>68</sup> *Ibid.*

<sup>69</sup> Solis, 2010, p. 599, see *supra* note 7.

This conclusion is no doubt in line with medical expertise on the subject. In a case report in *The Lancet*, Loai Nabil Al Barqouni *et al.* write the following:

Because white phosphorus has high lipid solubility, the injuries often extend deep into underlying tissues with resultant delayed wound healing. White phosphorus can also be absorbed systemically resulting in multiple organ dysfunction syndrome because of its effect on erythrocytes, kidneys, liver, and heart.<sup>70</sup>

If indeed the systemic absorption of WP results in multiple organ dysfunction syndrome, there can be no doubt that it should be seen as toxic chemical as defined in the Chemical Weapons Convention. This definition includes chemicals that cause “permanent harm to humans or animals” through its chemical action on life processes.<sup>71</sup> The same conclusion is reached by B.S. Atiyeh *et al.*, who from the perspective of the medical profession, concludes that WP must be classified as a toxic chemical.<sup>72</sup> Finally, the US Environmental Protection Agency labels WP as “extremely toxic to humans”.<sup>73</sup>

WP could also be seen as a precursor of a chemical weapon, if the gas that is formed by its reaction with oxygen can be labelled as toxic. This gas, “phosphorus pentoxide”, is widely considered to be toxic. MacLeod and Rogers argue that the gas is “toxic” – because continued exposure leads to a number of injuries that are related to the inherent toxicity of the chemical – but also state that the greatest danger from WP is not the inhalation of smoke, but being struck by burning fragments.<sup>74</sup> Reyhani also argues that the gas is toxic.<sup>75</sup> B.S. Altiyeh *et al.* (from the perspective of the medical profession) describes it as “[...] a severe pulmonary irritant, which in a closed space may reach concentrations sufficient to cause acute

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<sup>70</sup> Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14.

<sup>71</sup> Chemical Weapons Convention, Article II(2), see *supra* note 1.

<sup>72</sup> Atiyeh *et al.*, 2007, see *supra* note 14.

<sup>73</sup> US Environmental Protection Agency, “Phosphorus”, January 2000, available at <http://www.epa.gov/ttn/atw/hlthef/whitepho.html>, last accessed on 10 August 2011.

<sup>74</sup> MacLeod and Rogers, 2007, pp. 77 and 90, see *supra* note 2.

<sup>75</sup> Reyhani, 2007, pp. 31–32, see *supra* note 6.



inflammatory changes in the tracheobronchial tree”.<sup>76</sup> Tessier concludes that phosphorus pentoxide is toxic.<sup>77</sup>

The definition in Article II(2) is very wide: The category “toxic chemical” includes any chemical that *can* cause death, temporary incapacitation or permanent harm to humans or animals through its chemical action on life processes. A study by the US Army Center for Health Promotion and Preventive Medicine states that continued exposure to the vapours of WP “can lead to bronchitis, persistent coughing, severe burns, weakness, anemia, loss of appetite, and possibly pneumonia”.<sup>78</sup> There is no mention in Chemical Weapons Convention Article II(2) of how long the exposure to the chemical would have to be, in order for the relevant effects to occur. For this reason, it seems that the definition in this article is wide enough to cover WP smoke.

The conclusion is that there seems to be no doubt that WP should be classified as a “toxic chemical”, in as much as the chemical burns it causes upon contact with human skin results in toxicity. It seems equally clear that the chemical by-product of WP, “phosphorus pentoxide”, has toxic properties. The definition of “toxic chemical” in Chemical Weapons Convention Article II(2) is wide and covers WP smoke as well as WP.

### **3.2. Do the Toxic Properties of White Phosphorus Mean that it is Prohibited as a Chemical Weapon?**

Despite the consensus regarding classification of WP as a toxic chemical, there is disagreement among legal experts whether WP is a chemical weapon. The disagreement centres on the interpretation of Convention’s Article II(9)(c). This article excludes from the “chemical weapons” category, as defined in Article II(1)(a) those chemicals whose “military purposes are not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare”.<sup>79</sup> The question is thus whether the military purposes of WP

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<sup>76</sup> Atiyeh *et al.*, 2007, p. 3, see *supra* note 14.

<sup>77</sup> Tessier, 2007, p. 348, see *supra* note 2.

<sup>78</sup> US Army Center for Health Promotion and Preventive Medicine, “Detailed Facts About White Phosphorus”, available at <http://www.whale.to/b/whitephosphorus.pdf> (not paged). The study is also referred to in MacLeod and Rogers, 2007, p. 90, see *supra* note 2.

<sup>79</sup> Chemical Weapons Convention, Article II(9)(c), see *supra* note 1.

weapons are connected with, or dependent on, the use of the toxic properties of chemicals as a method of warfare.

MacLeod and Rogers conclude that WP, although *de jure* a chemical weapon as defined in the Chemical Weapons Convention, is not prohibited in its most common applications: providing illumination and producing smoke screens. Even the “flushing out” application of WP is permitted under the Chemical Weapons Convention, they argue, because this tactic was not dependent on the toxic properties of WP.<sup>80</sup> Solis takes the same view, concluding that Chemical Weapons Convention Article II(9)(c) implies that the primary uses of WP are not illegal, including the production of a smoke screen, providing illumination, and use for incendiary purposes.<sup>81</sup> He also argues that the use of WP in Fallujah was also not illegal under the Chemical Weapons Convention, because WP was used for incendiary purposes, not chemical or toxic.<sup>82</sup>

Reyhani, on the other hand, argues that the application of WP to “flush out” enemy combatants was illegal.<sup>83</sup> Contrary to Solis’ conclusion, both Reyhani and Tessier claim that the use of WP in Fallujah was indeed dependent on the toxic properties of WP.<sup>84</sup>

Peter Kaiser, spokesman for the OPCW (Organization for the Prohibition of Chemical Weapons, the international body responsible for implementation of the Chemical Weapons Convention), made a statement on the legal status of WP in 2004, following the debate about WP application in Fallujah:

[WP] is not forbidden by the CWC if it is used within the context of a military application which does not tend to require or does not intend to use the toxic properties of white phosphorus. White phosphorus is normally used to produce smoke, to camouflage movement.

If that is the purpose for which the white phosphorus is used, then that is considered under the Convention legitimate use. If on the other hand, the toxic properties of white phosphorus, the caustic properties, are specifically intended to be

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<sup>80</sup> MacLeod and Rogers, 2007, pp. 90–91, see *supra* note 2.

<sup>81</sup> Solis, 2010, p. 598, see *supra* note 7.

<sup>82</sup> Solis, 2010, pp. 598–599, see *supra* note 7. A similar point is made in MacLeod and Rogers, 2007, pp. 90–91, see *supra* note 2.

<sup>83</sup> Reyhani, 2007, p. 32, see *supra* note 6.

<sup>84</sup> *Ibid.*; Tessier, 2007, p. 357, see *supra* note 2.

used as a weapon, that of course is prohibited, because the way the Convention is structured or the way it is in fact applied, any chemicals used against humans or animals that cause harm or death through the toxic properties of the chemical are considered chemical weapons.<sup>85</sup>

There seems to be the consensus opinion that the purpose determines the legality of using WP weapons. I have concluded that both the WP smoke, and WP in itself (through dermal exposure), are toxic chemicals, as defined in Chemical Weapons Convention Article II(2). Following this, the application of WP weapons, when depending on these toxic properties as a method of warfare, would be illegal according to the Chemical Weapons Convention. The regular applications of WP weapons, providing smoke screen and illumination, are clearly not dependent on the toxicity of WP, and are thus not illegal under Chemical Weapons Convention. Nor is it illegal to use WP to set fire to, or mark, an object that is a military target.

The legality of using WP directly against enemy combatants is less clear, however. As mentioned above, Reyhani and Tessier argue that the use of WP in Fallujah was dependent on the toxic properties of WP, whereas Solis and MacLeod and Rogers disagree.<sup>86</sup> Much of the evidence does seem to point in the direction of the former's conclusion, particularly statements from military personnel involved in the events under discussion. Pentagon spokesman Lt. Col. Barry Venable, for example, said that the "flushing out" tactic depended on the "combined effects of the fire and smoke".<sup>87</sup> He did not say, of course, that the smoke had to be toxic. Still, if the smoke in fact *is* toxic, it is certainly a case of using toxic smoke as a weapon against personnel.

One could interject that, in fact, *all* smoke is toxic, if only the concentration is of a sufficient degree. Still, we do not generally consider, say, burning wood to be a chemical weapon even though the resulting smoke can be lethal. Technically, however, the source of the toxic gas is not relevant. If a weapon is designed to poison combatants with carbon

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<sup>85</sup> Paul Reynolds, "White Phosphorus: Weapon on the Edge", in *BBC News*, 16 November 2005.

<sup>86</sup> Reyhani, 2007, p. 32, see *supra* note 6; Tessier, 2007, p. 357, see *supra* note 2; Solis, 2010, pp. 598–599, see *supra* note 7; MacLeod and Rogers, 2007, pp. 90–91, see *supra* note 2.

<sup>87</sup> Tessier, 2007, p. 324, see *supra* note 2, citing *The Independent*, 2005, see *supra* note 53.

monoxide – a toxic by-product of burning wood – it would certainly have to be considered a chemical weapon under the convention, regardless of the fact that human exposure to this gas is very common.

Toxicity is in the definition in Article II(2) contingent on the possible effects of death, temporary incapacitation or permanent harm. It is not definitively proven that the use of WP in Fallujah was intended to bring about these effects as a *direct* result of WP. Furthermore, the toxicity of WP smoke does not seem to have been a necessary component for the “flushing out” tactic to be successful. This would depend on a wide definition of “temporary incapacitation”, which is not further defined in Chemical Weapons Convention. The term “incapacitating agent” is defined in *The Oxford Essential Dictionary of the U.S. Military*: “An agent that produces temporary physiological or mental effects, or both, that will render individuals incapable of concerted effort in the performance of their assigned duties”.<sup>88</sup> By this definition, one could certainly say that the use of WP in Fallujah was dependent on its effect of “temporary incapacitation”. WP was successful in “flushing out” enemy combatants precisely because it rendered individuals incapable of concerted effort in the performance of their duties (that is, to hold a certain position for combat purposes).

The conclusion is that WP weapons falls outside the boundaries set for illegal chemical weapons in Chemical Weapons Convention in its most common applications, due to the specific requirements in Article II(9)(c). WP used for providing illumination or a smoke screen, or for marking a target or setting fire to an object, is not illegal under the Chemical Weapons Convention. If WP is used in a manner dependent on its toxicity, however, it would be illegal according to the Chemical Weapons Convention. The use of WP for “flushing out” enemy combatants was dependent on WP toxic properties, and therefore not permitted under the Chemical Weapons Convention.

### **3.3. Are White Phosphorus Weapons Prohibited by the Chemical Weapons Convention as Riot Control Agents?**

Some have argued that certain applications of WP entail that it is used as a “Riot Control Agent” (RCA). Such agents are also regulated in Chemical

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<sup>88</sup> *The Oxford Essential Dictionary of the U.S. Military*, Oxford University Press, New York, 2001.

Weapons Convention. Concretely, Article I(5) states that: “Each State Party undertakes not to use riot control agents as a method of warfare”.<sup>89</sup> The term “Riot Control Agent” is defined in Chemical Weapons Convention Article II(7): “Any chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure”. It is not in dispute that short-time exposure to WP smoke has short-term and temporary sensory irritation as an effect. For this reason, it is difficult not to agree with Reyhani, who claims that WP has RCA properties.<sup>90</sup>

It may seem superfluous to discuss whether WP is regulated as an RCA in the Chemical Weapons Convention after concluding above that WP classifies as a toxic chemical. It is difficult to think of an application of WP which would be restricted because of WP’s RCA properties, but not its toxic properties. It has been made clear above, however, that there is disagreement among legal experts and among States about whether, for example, using WP for “flushing out” combatants is prohibited under the Chemical Weapons Convention. It might be the case that restrictions of the use of WP because of its RCA properties could be more easily agreed upon than those stemming from its toxic properties. For example, if one takes the position that the “flushing out” tactic of Fallujah depended on WP smoke causing “sensory irritation”, rather than “temporary incapacitation”, then regulations stemming from WP’s RCA properties would apply, but not those from its toxic properties.

The difference between RCA and toxic chemicals in regard to the rules of the Chemical Weapons Convention is a topic of debate. The United States’ position is that RCA is a separate category from toxic chemicals (thus not a “chemical weapon”). The argumentation is that Chemical Weapons Convention Article I(5) – which prohibits RCA as a method of warfare – is superfluous if RCA is regulated in the same way as chemical weapons. The United States government has argued that Article I(5) was included as a compromise in the negotiations, and agreed by the United States in exchange for leaving RCA outside the definition of chemical weapons.<sup>91</sup> This is the divergent view, however, as most States

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<sup>89</sup> Chemical Weapons Convention, Article I(5), see *supra* note 1.

<sup>90</sup> Reyhani, 2007, p. 56, see *supra* note 6.

<sup>91</sup> Gro Nystuen, *Non-lethal weapons and international humanitarian law*, FFI/RAPPORT-2008/01983, Norwegian Defence Research Establishment, Kjeller, 2008, p. 30

and legal experts seem to agree that RCA falls within the definition of toxic chemicals and is therefore subjected to the same set of restrictions and regulations as lethal chemical weapons.<sup>92</sup> Gro Nystuen has argued that the wording of the convention is the most important – in line with the Vienna Convention on the Law of Treaties (1969) Article 31 – and that the wording does not exclude RCA from chemical weapons definition, but on the contrary indicates that RCA is a subcategory.<sup>93</sup>

I agree with Nystuen on this point. Particularly revealing, in my opinion, is Article II(9), which defines the term “purposes not prohibited under this convention” as, amongst other things, “law enforcement including domestic riot control purposes”.<sup>94</sup> Although the term “purposes not prohibited under this convention” is used 14 times in the Chemical Weapons Convention, it is not used directly in conjunction with the prohibition or definition of RCA (that is, Articles I(5) and II(7)). The definition in Article II(9)(d) must therefore refer to the definition of a “chemical weapon” in Article II(1)(a), which deals with “toxic chemicals and their precursors”.

For a certain application of WP to be considered illegal under the regulations for RCA, it must also be used as a “method of warfare”. “Method of warfare” is not defined in the Chemical Weapons Convention. According to Ernest Harper, this was intentional, and the result of the need to find a compromise between polarized parties in the negotiations over the Chemical Weapons Convention text.<sup>95</sup> Harper concludes that the term should be defined in the following manner: “Riot Control Agents are a method of warfare when used to systematically enable or multiply the use of lethal force against hostile enemies”.<sup>96</sup> If an RCA is used in order to avoid the use of lethal force and save lives, however, it should not be regarded as being used as a “method of warfare”.<sup>97</sup> This is also the US

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(<http://www.legal-tools.org/doc/80f124/>). (Reyhani describes this compromise in Reyhani, 2007, pp. 39–40, see *supra* note 6.)

<sup>92</sup> *Ibid.*, p. 29.

<sup>93</sup> *Ibid.*, p. 30; Vienna Convention on the Law of Treaties, 1969, Article 31 (<http://www.legal-tools.org/doc/6bfcd4/>).

<sup>94</sup> Chemical Weapons Convention, Article II(9)(d), see *supra* note 1.

<sup>95</sup> Ernest Harper, “A Call for a Definition of Method of Warfare in Relation to the Chemical Weapons Convention”, in *Naval Law Review*, 2001, vol. 48, p. 133.

<sup>96</sup> *Ibid.*, p. 158.

<sup>97</sup> *Ibid.*

position on the subject.<sup>98</sup> Reyhani arrives at a similar conclusion, arguing that if an RCA is used to flush out combatants in order to kill them, then this must certainly be regarded as a “method of warfare”.<sup>99</sup>

The lack of a definition of “method of warfare” makes it difficult to arrive at a strong conclusion in regard to the permissibility of using WP when considering that its smoke has RCA properties. For this reason, it is tempting to agree with Harper that the key issue should be whether RCAs are applied as force multipliers. However, since the text of the Chemical Weapons Convention is unclear on this point, one should not venture too far in narrowing the meaning of the term “method of warfare”, particularly if Harper is right in stating that the term was intentionally left undefined. Furthermore, it is certainly debatable whether “method of warfare” can be generally contingent on lethality. Hypothetically, RCAs could be used as a non-lethal means to force the civilian population out of an area as part of a campaign of ethnic cleansing. Certainly, such a tactic should be regarded as a “method of warfare”.

In any case, it is not necessary to provide a specific definition of “method of warfare” that would be applicable in all circumstances for the purposes of this paper. As far as WP weapons are concerned, it should suffice to conclude that there does not seem to be disagreement among legal experts that using RCA as a lethal force multiplier would fall into the category of “method of warfare”. Therefore it seems fairly safe to conclude that the use of WP in this manner would be prohibited under the Chemical Weapons Convention. This prohibition is most clearly relevant to the “flushing out” tactics discussed. Employment of such tactics is prohibited under the Chemical Weapons Convention.<sup>100</sup>

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<sup>98</sup> Reyhani, 2007, p. 45, see *supra* note 6.

<sup>99</sup> *Ibid.*, p. 58.

<sup>100</sup> This conclusion does not necessarily mean that the use of white phosphorus in Fallujah was illegal. Due to the scope of this text, I will not in these pages discuss the important issue of whether the fighting in Fallujah took place in a context of “law enforcement” or not, which has relevance for the rule in Article II(9)(d). Reyhani discusses this, and concludes that the use of white phosphorus in Fallujah should not be considered part of “law enforcement”, see *ibid.*, p. 64; The issue is also raised in Haines, 2007, p. 280, see *supra* note 2. I find it interesting that none of these articles discuss how human rights law, and particularly the right to life, will apply in cases where international humanitarian law will not. This issue warrants further discussion, in my opinion, although it falls outside the scope of this paper.

#### **4. White Phosphorus and the Convention on Certain Conventional Weapons**

To what extent are WP weapons regulated in the 1980 Convention on Certain Conventional Weapons? In this chapter, I will first discuss whether WP weapons fall into the category of “incendiary weapons” as defined in the Convention on Certain Conventional Weapons, then discuss whether and to what extent the common uses of WP weapons are regulated by this convention.

##### **4.1. Are White Phosphorus Weapons Incendiary Weapons as Defined in the Convention on Certain Conventional Weapons?**

Protocol III of the Convention on Certain Conventional Weapons (*Protocol on Prohibitions or Restrictions on the Use of Incendiary Weapons*) deals with incendiary weapons. There is no doubt that WP weapons have the capability to set fire to persons and objects, and are therefore incendiary in the common use of this term. Protocol III, however, sets the threshold for an incendiary somewhat higher. For this reason, the US military has argued – in defence of allegations of the use of WP in Fallujah – that the WP weapons indeed *are* incendiary, but not as defined under the Convention on Certain Conventional Weapons.<sup>101</sup> Protocol III defines an “incendiary weapon” as “any weapon or munition which is *primarily designed* to set fire to objects or to cause burn injury to persons through the action of flame, heat, or combination thereof, produced by a chemical reaction of a substance delivered on the target”<sup>102</sup> (italics added). The crucial words are “primarily designed”, which seem to require that for a weapon to be covered by the definition it is not sufficient that it has the potential to be incendiary, but that this potential must be the primary function of the weapon. This relates to the purpose of design of the weapon in question, not its actual military application.

In the case of WP weapons, this would mean that if the weapon is designed to create a smoke screen, but can in fact also be used for incendiary purposes, it would fall outside the definition. Indeed, the protocol specifically excludes from the “incendiary weapons” category munitions

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<sup>101</sup> A statement was made to this effect by General Peter Pace, chairman of the Joint Chiefs of Staff, cited by The American Society of International Law, 2006, p. 487, see *supra* note 23.

<sup>102</sup> Convention on Certain Conventional Weapons Protocol III, Article 1(1), see *supra* note 1.



with “incidental incendiary effects”, such as illuminants, tracers, smoke or signalling systems.<sup>103</sup> However, if the primarily designed purpose of a specific WP weapon is incendiary, it will fall under the definition in Protocol III.<sup>104</sup>

There is disagreement about how Protocol III applies to specific WP weapons. Peter Herby, head of the Arms Unit at the International Committee of the Red Cross (ICRC), said that Protocol III could apply to WP weapons as they were used in Operation Cast Lead.<sup>105</sup> Human Rights Watch in its report on Operation Cast Lead in Gaza supports the position that Protocol III covers WP weapons in this regard.<sup>106</sup>

Reyhani argues that the WP weapons that were used in Fallujah fall under the definition in Protocol III.<sup>107</sup> He argues further that the US would have been in breach of Protocol III, Article 2(3) if it had ratified the Protocol, because WP weapons were delivered from the ground without knowledge of whom it would be hitting.<sup>108</sup> In contrast, Solis argues that WP was used as an incendiary in Fallujah, but that this use against combatants would not have been prohibited under the Convention on Certain Conventional Weapons Protocol III, even if the US had ratified it at the time.<sup>109</sup> Similarly, MacLeod and Rogers also conclude that the use of WP weapons in Fallujah was not illegal under Protocol III.<sup>110</sup>

The disagreements described above may stem from the lack of full clarity of the definitions in Protocol III. The protocol is clear in that its

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<sup>103</sup> *Ibid.*, Article 1(1)(b)(i).

<sup>104</sup> This is also the conclusion of MacLeod and Rogers, 2007, p. 94, see *supra* note 2.

<sup>105</sup> Peter Herby, “Phosphorous weapons – the ICRC’s view”, ICRC Website, 17 January 2009, available at <https://www.icrc.org/eng/resources/documents/interview/weapons-interview-170109.htm>.

<sup>106</sup> Human Rights Watch, 2009, pp. 58–59 and 63, see *supra* note 9. Human Rights Watch does not discuss the point at length, but focuses instead on customary international law. As its report deals with Gaza, it is significant that Israel has not ratified Protocol III, even though it is party to the Convention on Certain Conventional Weapons.

<sup>107</sup> Reyhani, 2007, pp. 88–89, see *supra* note 6.

<sup>108</sup> MacLeod and Rogers criticise Reyhani on this point, arguing that Protocol III does not prohibit use of incendiary weapons against combatants, meaning that his conclusion regarding the use of WP weapons in Fallujah is not relevant. MacLeod and Rogers, 2007, p. 93, see *supra* note 2. This criticism is not entirely accurate, however, as Reyhani’s argument is that the efforts to secure a minimum of civilian injury and damage had been unsatisfactory.

<sup>109</sup> Solis, 2010, pp. 598–599, see *supra* note 7.

<sup>110</sup> MacLeod and Rogers, 2007, p. 92, see *supra* note 2.

definition of incendiary weapons cover only those primarily designed to have this function, and does not cover incidental incendiary effects. A problem that is unsolved in the text, however, is that most WP weapons will have incendiary effects that might not be considered explicitly as a primary function, but still can be important effects in practice. For example, a WP mortar can be designed for creating a smoke screen, but can also be used for “flushing out” combatants through its combined incendiary and smoke generating effects. In this case, the incendiary effect would not be the explicitly stated primary function of the weapon, but still one that is generally recognised, and which increases the applicability of the weapon. There is little guidance in Protocol III to tell us how to deal with a weapon that has incendiary effects that are neither explicitly primary nor incidental. Furthermore, there is nothing that definitively tells us who has the authority to determine the weapon’s primary function by design.

What if the manufacturer of a weapon explicitly states that the designed purpose is to create a smoke screen, but in fact also relies on dual use-functions including incendiary effects of the weapon for its sale? Since the text does not specify exactly who has the authority to decide what the primary designed function of a given weapon is, it seems reasonable that this cannot rest exclusively with the designer or manufacturer of the weapon, but must be decided after taking all relevant aspects into account. If the “real” primary function of a weapon is other than that which is stated, then the “real” function must be regarded as the one which is legally relevant.

This may be clear in principle, but will be difficult in practice. The same mortar type can be used for creating a smoke screen in one context and as an incendiary in another. In this case, it is clear that the creation of a smoke screen is one primary function, but unclear if the incendiary effects should also be regarded as a primary function. The words in Protocol III indicate that potential or actual effects of the weapon are not relevant for the definition. The emphasis on “design” in the definition of an incendiary weapon, and the complementary dismissal of “incidental effects”, shows that the convention is not to be understood in that way.

One way to sort this out could be to consider whether the weapon would likely to have been as widely distributed if not for the incendiary function. It is possible that militaries will purchase, and distribute to the battlefield, munitions on the basis of their primary functions, and not their incidental ones. If the versatility of a weapon is what makes it attractive – due to its dual-use potential – then all functions that would combine to

significantly increase versatility should be regarded as primary. The reason is that if one of these functions were taken away, the versatility would decrease, and so would the distribution of the weapon. Therefore, if it is probable that a mortar type would be less widely distributed without the incendiary effect, then this will be evidence that the incendiary effect should overall be considered to be equivalent to a primary function.

The conclusion is that only WP weapons primarily designed to function as incendiaries are clearly covered by Protocol III of the Convention on Certain Conventional Weapons. If it is unclear whether incendiary function of a WP weapons should be regarded as primary or incidental, an overall assessment must be made to determine whether the weapons falls under the definition. A relevant test would be to estimate whether the weapon would be less widely distributed without the incendiary effect.

#### **4.2. Legality of the Uses of White Phosphorus Weapons under the Convention on Certain Conventional Weapons**

Protocol III includes four types of prohibitions on incendiary weapons. First, it prohibits making civilians and civilian objects the object of attack of incendiary weapons.<sup>111</sup> Second, it places restrictions on air-delivered incendiary weapons, by prohibiting such tactics for use against objects within a concentration of civilians.<sup>112</sup> Third, it prohibits the use of incendiary weapons (also ground-delivered) within civilian concentrations unless the military objective is clearly separated and feasible precautions have been made to minimise civilian injury and damage.<sup>113</sup> Finally, Protocol III prohibits the use of incendiary weapons on forests and plant cover.<sup>114</sup> Notably, there is nothing in Protocol III that prohibits anti-personnel uses of incendiary weapons against combatants.

What is the significance of the four prohibitions in the Protocol? The first and third prohibitions of Protocol III actually seem quite redundant. There are undisputed rules in customary international humanitarian law that require distinction between military and civilian targets, and that

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<sup>111</sup> Convention on Certain Conventional Weapons Protocol III, Article 2(1), see *supra* note 1.

<sup>112</sup> *Ibid.*, Article 2(2).

<sup>113</sup> *Ibid.*, Article 2(3).

<sup>114</sup> *Ibid.*, Article 2(4).

prohibit the targeting of civilians and civilian objects.<sup>115</sup> These basic principles, to which I return in the next chapter, apply without question to both incendiary and non-incendiary weapons. The only additional restriction in Protocol III, therefore, is the limitation on air-delivered incendiary weapons on targets within civilian concentrations.<sup>116</sup>

Out of the types of uses of WP weapons described in chapter 2.1. above, only that which involves the direct use of WP as an incendiary weapon is clearly covered in Protocol III of the Convention on Certain Conventional Weapons. Even this application of WP, however, is not prohibited under the convention if used against combatants or objects that are legitimate military targets. The other modes of application would be covered if it can be reasonably established that the incendiary effect of the WP weapons can be said to be a primary effect by design. Even so, the restrictions on use are not severe. “Flushing out” combatants, or using WP weapons for creation of a smoke screen, illumination or marking a target, would only be prohibited if the attack in question involved the use of WP weapons that can be assumed to have an incendiary function as a primary effect by design and if it was used in a context where the risk of injuring or damaging civilian persons or objects would be at unacceptably high.

## **5. White Phosphorus and Customary International Humanitarian Law**

In this chapter, I will first discuss the relevance of selected rules of customary international humanitarian law for WP weapons, and then discuss whether and to what extent the common uses of WP weapons are regulated by customary international humanitarian law.

### **5.1. White Phosphorus and the Rules of Customary International Humanitarian Law**

Which rules of customary international humanitarian law may apply to WP weapons? MacLeod and Rogers list four basic principles that they consider to be relevant: “[1] that weapons must not be of a nature to cause unnecessary suffering or superfluous injury; [2] must not be indiscriminate in their effects; [3] must not be treacherous in nature; and [4] must

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<sup>115</sup> The redundancy is also commented upon in Dinstein, 2010, p. 77, see *supra* note 7.

<sup>116</sup> *Ibid.*

not be abhorrent to ordinary people”.<sup>117</sup> The list appears to contain the main principles that others have also used in similar analyses, and will therefore serve as a starting point for the following discussion.<sup>118</sup> The exception is the third principle on the list (*treacherousness*), which I will not discuss further. According to MacLeod and Rogers, this principle is probably the rationale behind the prohibition against poisonous, poison gas, chemical and biological weapons.<sup>119</sup> The reason why I disregard this principle here, is that I have chosen to exclude the discussion of international regulation of poisonous and poison gas weapons from this paper, and that I have discussed the toxicity of WP in regard to the Chemical Weapons Convention at length.

### **5.1.1. The Principle of No Unnecessary Suffering or Superfluous Injury**

The first principle on the list, prohibition of weapons that are of a nature to cause unnecessary suffering or superfluous injury, follows from one of the basic rules of customary international humanitarian law, which is listed as Rule 70 in the 2005 ICRC Study: “The use of means and methods of warfare which are of a nature to cause superfluous injury or unnecessary suffering is prohibited”.<sup>120</sup> MacLeod and Rogers’ principle follows logically from this rule, because if a weapon is *of such a nature* that it causes unnecessary suffering or superfluous injury, *all use* of this weapon will be contrary to that rule.

Rule 70 is actually a two-fold rule. It prohibits weapons that by their nature cause unnecessary suffering, and also the use of weapons in such a manner that they are likely to cause unnecessary suffering.<sup>121</sup> Of course, it would still be more difficult to prove that a given weapon type is of such a *nature*, than to argue that a *certain use* of that weapon type is contrary to customary international humanitarian law.

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<sup>117</sup> MacLeod and Rogers, 2007, p. 83, see *supra* note 2.

<sup>118</sup> The four principles corresponds with the list of principles in Jeffrey S. Morton, “The Legal Status of Laser Weapons That Blind”, in *Journal of Peace Research*, November 1998, vol. 35, no. 6, p. 699. The First three principles are also listed in Tessier, 2007, pp. 326–327, see *supra* note 2.

<sup>119</sup> MacLeod and Rogers, 2007, p. 85, see *supra* note 2.

<sup>120</sup> Henckaerts and Doswald-Beck, 2005, p. 237, see *supra* note 8.

<sup>121</sup> Haines, 2007, p. 265, see *supra* note 2.

The ICJ has called the principle of no unnecessary suffering or superfluous injury one of the “cardinal principles” of international humanitarian law.<sup>122</sup> It is codified in Article 35 of Additional Protocol I of the 1949 Geneva Conventions, and similar rules are mentioned in the preamble of the St. Petersburg Declaration and in Article 23(d) of the 1907 Hague Regulations.<sup>123</sup> There is no dispute that the rule has the status of customary international law, but the trouble is to determine what exactly constitutes “superfluous injury or unnecessary suffering” – a phrase that will have different meanings to different people.<sup>124</sup> For example, one may ask if WP weapons really cause more suffering than, say, being hit by a regular rifle bullet. Certainly, the WP wound would look worse from the outside, but it could be less deadly and the internal damage need not necessarily be worse.

A notable effort to resolve this problem was made through the so-called S<sub>IR</sub>US project.<sup>125</sup> Medical staff of the ICRC put forward a proposal of four tests, each implying unnecessary suffering or superfluous injury. The conditions are that the effects of the weapons must be design-dependent and foreseeable when used against human beings, and cause one of these four effects:

1. Specific disease, specific abnormal physiological state, specific abnormal psychological state, specific and permanent disability or specific disfigurement.

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<sup>122</sup> International Court of Justice, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinions, ICJ Reports, 8 July 1996, para. 78 (<http://www.legal-tools.org/doc/d97bc1/>).

<sup>123</sup> Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of International Armed Conflicts (Protocol I), 8 June 1977, Article 35(2) (<http://www.legal-tools.org/doc/d9328a/>); Declaration Renouncing the Use, in Time of War, of Explosive Projectiles Under 400 Grammes Weight, St. Petersburg, 29 November/11 December 1868, Preamble (<http://www.legal-tools.org/doc/c951bc/>); Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 190, Article 23(d) (<http://www.legal-tools.org/doc/d5e260/>).

<sup>124</sup> J. McClelland, “Conventional Weapons: A Cluster of Developments”, in *The International and Comparative Law Quarterly*, July 2005, vol. 54, no. 3, p. 756; MacLeod and Rogers, 2007, p. 84, see *supra* note 2.

<sup>125</sup> Robin M. Coupland (ed.), *Towards a Determination of which Weapons cause “Superfluous injury or unnecessary suffering”*, The S<sub>IR</sub>US Project, International Committee of the Red Cross, Geneva, 1997, cited by *ibid.* and MacLeod and Rogers, 2007, pp. 84–85, see *supra* note 2.

2. Field mortality of more than 25 % or a hospital mortality of more than 5 %.
3. Grade 3 wounds as measured by the Red Cross wound classification (10 cm or more in skin cavity).
4. Effects for which there is no well recognized and proven treatment.<sup>126</sup>

The document explains further how these criteria apply to weapons that are already prohibited. Significantly, they argue that Criterion 1 and possibly Criteria 2 and 4 apply to chemical weapons.<sup>127</sup> Furthermore, they argue that these criteria also apply to weapons which are “subject to either a review of the law pertaining to them or widespread stigmatization”, notably that Criterion 2 and possibly Criterion 1 apply to “burning weapons”.<sup>128</sup>

The four tests of the SIrUS project are perhaps the best criteria available at the present time for defining the concept of “unnecessary suffering or superfluous injury”, but they also illustrate how a precise interpretation of the term still seems remote. In most cases, it is not possible to read the four tests as a form of algorithm leading to a clear result in regard to WP weapons, but they can at least serve as guidelines. Specifically, one could argue that Criterion 1 would be met by WP weapons, because WP is likely to cause an abnormal physiological state through its chemical reaction with the human body. It is not certain if Criterion 2 will also be met, because the mortality rate from WP burns is uncertain. In the mentioned case report in *The Lancet*, the authors write: “White phosphorus burns are associated with *significant morbidity* often necessitating lengthy hospital stays. Extreme cases can be fatal [my italics]”, but also note that WP burns “are rarely encountered in practice and literature describing cases is limited”.<sup>129</sup> Criterion 3 is likely to be met when WP weapons are used directly against individuals. Criterion 4 will not be met.<sup>130</sup> In sum, the approach provided by these tests strengthens the case for arguing that the principle of no unnecessary suffering or superfluous injury may apply at least to certain applications of WP weapons.

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<sup>126</sup> Coupland, 1997, p. 23, see *supra* note 125.

<sup>127</sup> *Ibid.*, p. 26.

<sup>128</sup> *Ibid.*

<sup>129</sup> Al Barqouni *et al.*, 2010, p. 68, see *supra* note 14.

<sup>130</sup> A treatment is described in Seth *et al.*, 2007, p. 87, see *supra* note 32.

State practice is also relevant. *The UK Manual of the Law of Armed Conflict* (2004) advises against using WP directly against personnel, stating that the principle of no unnecessary suffering or superfluous injury “[...] applies to white phosphorus, which is designed to set fire to targets such as fuel and ammunition dumps or for use to create smoke, and which should not be used directly against personnel”.<sup>131</sup>

There is also another rule of customary international humanitarian law that should be considered in this context, namely Rule 85 in the 2005 ICRC Study: “The anti-personnel use of incendiary weapons is prohibited, unless it is not feasible to use a less harmful weapon to render a person *hors de combat*”.<sup>132</sup> This rule is based on the more general Rule 70.<sup>133</sup> Rule 85 does not specify that the incendiary effect must be “primary”, as is the case with Convention on Certain Conventional Weapons, Protocol III. There is therefore no disagreement that WP weapons are considered incendiary as far as Rule 85 is concerned. The rule shows that there is no general prohibition on the use of WP weapons on combatants due to its incendiary properties, but with the restriction that other and less harmful weapons must be applied instead, if they can fulfil the same military purpose.<sup>134</sup> It is worth noting that Rule 85 is less restrictive than the position found in the *The UK Manual of the Law of Armed Conflict*, as the British position is that WP should not be used, whereas Rule 85 states that it may be used if necessary.<sup>135</sup>

It is not clear if Rule 85 implies that there are more severe restrictions on incendiary weapons than on other weapons by customary international law. William Boothby has rightly pointed out that combatants are obligated by the principle of no unnecessary suffering or superfluous injury to use a less harmful weapon in all cases, if the military effect would be the same.<sup>136</sup> It is even imaginable that, in some cases, an incendiary weapon could be less harmful than other alternatives. On these grounds, one may

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<sup>131</sup> UK Ministry of Defence, *The Joint Service Manual of the Law of Armed Conflict*, Joint Doctrine and Concepts Centre, London, 2004, p. 112 (<http://www.legal-tools.org/doc/3cdeca/>).

<sup>132</sup> Henckaerts and Doswald-Beck, 2005, p. 289, see *supra* note 8.

<sup>133</sup> MacLeod and Rogers, 2007, p. 95, see *supra* note 2. Reyhani, 2007, pp. 85–86, see *supra* note 6.

<sup>134</sup> See also Solis, 2010, p. 599, see *supra* note 7.

<sup>135</sup> Haines, 2007, pp. 276–277, see *supra* note 2.

<sup>136</sup> William H. Boothby, *Weapons and the Law of Armed Conflict*, Oxford University Press, Oxford, 2009, p. 207.



certainly question the added value of Rule 85 in relation to the more general principle. However, there is no doubt about the fact that the general principle also covers incendiary weapons.

The question of whether there are alternatives to WP with which one may achieve the same military effects is critical. It is difficult, of course, to provide a definitive answer to this, because alternative munitions have other characteristics – for example, they might require more time to create a usable smoke screen – which may or may not be seen as decisive disadvantages. However, there are many who have argued that viable alternatives do exist. In regard to the use of WP weapons in Operation Cast Lead, Human Rights Watch has argued that alternatives were available in the form of 155 mm smoke projectiles, which it claims are more easily deployed over a wider area, cause no damage to civilians, and are manufactured by the Israeli Military Industries (IMI).<sup>137</sup> The Goldstone report has also concluded that alternatives did exist and which were free from the hazards of WP.<sup>138</sup>

Nothing above suggests that WP weapons should be considered illegal as such. There are, however, clearly binding restrictions on the use of WP weapons. Applications of such weapons in a manner that causes unnecessary suffering or superfluous injury for human beings, including combatants, are prohibited. This will most clearly be relevant if WP weapons are used directly against combatants.

### 5.1.2. The Principle of Distinction

The second principle on MacLeod and Rogers' list is the principle of distinction between civilians and civilian objectives on the one hand and combatants and military objectives on the other. This rule is also stated in the 2005 ICRC Study as Rule 71: "The use of weapons which are by nature indiscriminate is prohibited".<sup>139</sup> This rule follows from the more general principles laid out in Rule 1, which requires that attacks may only be carried out against combatants and not civilians, and Rule 7, which requires that the parties to a conflict attack military objects only, and never civilian objects.<sup>140</sup> Similar to the principle of no unnecessary suffer-

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<sup>137</sup> Human Rights Watch, 2009, pp. 4–5, see *supra* note 9.

<sup>138</sup> Goldstone *et al.*, 2009, para. 901, see *supra* note 11.

<sup>139</sup> Henckaerts and Doswald-Beck, 2005, p. 244, see *supra* note 8.

<sup>140</sup> *Ibid.*, pp. 3 and 25.

ing or superfluous injury, the ICJ refers to the principle of distinction as a “cardinal principle” of international humanitarian law.<sup>141</sup> Dinstein refers to it as “probably the most fundamental pillar” of the law of international armed conflict.<sup>142</sup> The fundamental principles of civilian immunity and distinction between civilians and military are also codified in Additional Protocol I to the 1949 Geneva Conventions, Articles 48, 51(2), and 52(2).<sup>143</sup> Among other weapons types, the legality of landmines has been challenged on this basis.<sup>144</sup>

Rule 84 of the 2005 ICRC Study introduces a further specification of the principle when incendiary weapons are used: “If incendiary weapons are used, particular care must be taken to avoid, and in any event to minimise, incidental loss of civilian life, injury to civilians and damage to civilian objects”.<sup>145</sup> The rule does not require that the incendiary properties of the weapon be “primary”, as in Protocol III of the Convention on Certain Conventional Weapons, so WP weapons are clearly regulated by this rule.

Rule 84, however, goes no further than the general Rules 1 and 7, and has, on this basis, been criticised for being “entirely superfluous”.<sup>146</sup> One could perhaps argue that the words “particular care” indicate that Rule 84 further enhances the requirement for a clear distinction, indicating that this is an even more pressing matter when incendiary weapons are concerned. This line of reasoning seems flawed, however. Boothby has rightly pointed out that the general principle of distinction as specified in Additional Protocol I to the Geneva Conventions, Article 57(2)(ii) requires the attacker to take “all feasible precautions” to avoid damage to civilian persons or objects.<sup>147</sup> It is difficult to see how the demand for

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<sup>141</sup> International Court of Justice, 1996, para. 78, see *supra* note 122. The principle is sometimes referred to as the “principle of discrimination”. I choose instead to use the term “distinction”, because this is the term used in the Advisory Opinion and in the ICRC Study. See also Antonio Cassese, Guido Acquaviva, Mary Fan, and Alex Whiting, *International Criminal Law: Cases and Commentary*, Oxford University Press, Oxford, 2011, p. 153.

<sup>142</sup> Dinstein, 2010, p. 62, see *supra* note 7.

<sup>143</sup> Protocol (I) Additional to the Geneva Conventions of 12 August 1949, see *supra* note 123.

<sup>144</sup> MacLeod and Rogers, 2007, p. 85, see *supra* note 2.

<sup>145</sup> Henckaerts and Doswald-Beck, 2005, pp. 3 and 287, see *supra* note 8.

<sup>146</sup> Haines, 2007, p. 275, see *supra* note 2.

<sup>147</sup> Boothby, 2009, p. 206, see *supra* note 136. This article is considered to be a codification of customary law.

“particular care” in using incendiary weapons can exceed the demand for taking “all feasible precautions”.

Regardless, it is clear that none of the rules described above dictate that WP weapons are illegal as such. On this point, Steven Haines has concluded as follows:

On their own, however, the customary norms in Rules 70 and 71 are neither sufficiently persuasive nor prescriptive enough to lead directly to the banning of specific types of weapons. This is something that seems to require formal agreement in the form of treaty law.<sup>148</sup>

Although one can question whether Haines’ conclusion would hold for all weapon types, I believe it is accurate in regard to WP weapons specifically. The most common justification of WP weapons is that it is intended to be used as an obscurant. If this mode of application is deployed in the open field with little risk of hurting either combatants or civilians, there is nothing in any of the Rules described above that would prevent WP weapons from being used legally.

Still, there are reasons for arguing that the principle of distinction may apply to certain applications of WP weapons. Reyhani concludes that the US military was in violation of Rule 84 in Fallujah, which was an urban area and where the risk of causing injury to civilians and civilian objects was likely to be significant.<sup>149</sup> There is also significant evidence indicating that WP weapons may have been used in breach of the principle in Operation Cast Lead in Gaza. Human Rights Watch has attempted to document this in its mentioned report.<sup>150</sup> Although the report has been heavily criticised by the Israeli government, it presents convincing evidence that WP weapons were used over urban areas, in which the risk of civilian injury must have been high (see image and map, below). The Israelis have claimed that their use of WP during the operation was legal, and have particularly stressed that it was used for the

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<sup>148</sup> Haines, 2007, p. 278, see *supra* note 2.

<sup>149</sup> Reyhani, 2007, p. 91, see *supra* note 6.

<sup>150</sup> Human Rights Watch, 2009, pp. 1–3 and 63–65, see *supra* note 9.

creation of smoke screens.<sup>151</sup> Two Israeli officers were later reprimanded for the WP attack documented in the image and map below.<sup>152</sup>

**Image 3**<sup>153</sup>



Two brothers aged four and five were killed and 14 others were wounded when white phosphorus shells burst above this UN school in Beit Lahiya on January 17, 2009. © 2009 Getty Images

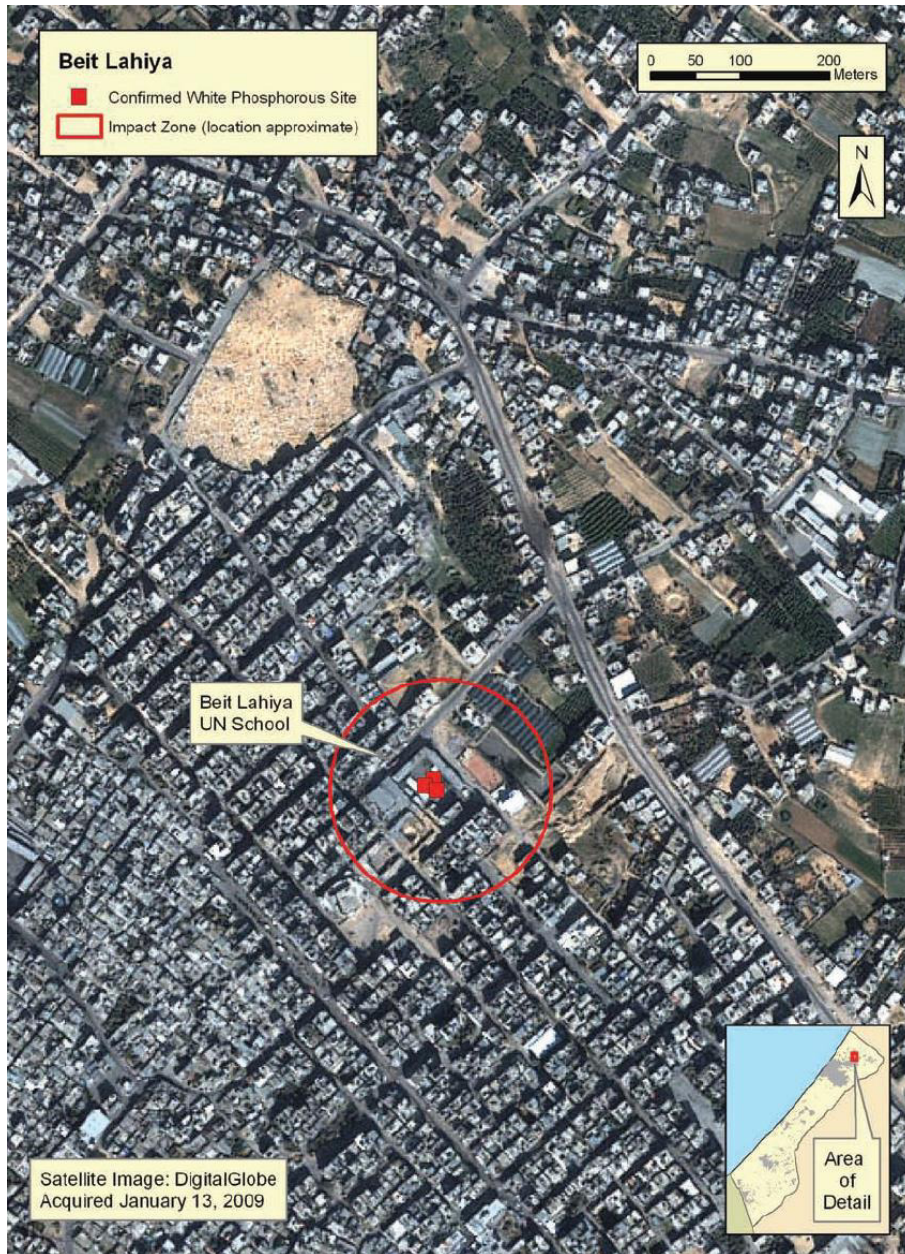
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<sup>151</sup> Hider and Frenkel, 2009, see *supra* note 59.

<sup>152</sup> Paul Wood, “Israel reprimands officers over UN compound shelling”, in *BBC News*, 1 February 2010.

<sup>153</sup> Image from Human Rights Watch, 2009, p. 22, see *supra* note 9.

Image 4<sup>154</sup>



<sup>154</sup> Map from *ibid.*, p. 18.

### 5.1.3. The Martens Clause

The final principle on MacLeod and Rogers' list is that of "abhorrence to ordinary people". They claim that blinding laser weapons are prohibited for this reason.<sup>155</sup> The "abhorrence principle" of MacLeod and Rogers bears strong resemblance to the so-called "Martens Clause". This term refers to the paragraph stated in the preamble of Hague Conventions II (1899) and IV (1907) that until a more complete code of laws of war has been issued, the Contracting Parties will recognise that inhabitants remain protected by the laws of humanity and the dictates of the public conscience.<sup>156</sup> The clause can be interpreted to prohibit weapons that arouse "widespread revulsion" in the public.<sup>157</sup>

It is curious that MacLeod and Rogers introduce what they label an "abhorrence principle" instead of referring to the Martens Clause. This clause is a well-known part of customary international humanitarian law. It is, for example, referred to in many of the cases before the International Criminal Tribunal of Yugoslavia.<sup>158</sup> The International Court of Justice has stated that the Martens Clause "has proved to be an effective means of addressing the rapid evolution of military technology".<sup>159</sup> A modern version of the clause is found in Additional Protocol I to the Geneva Conventions, Article 1(2):

In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law

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<sup>155</sup> MacLeod and Rogers, 2007, p. 85, see *supra* note 2.

<sup>156</sup> Convention (II) with Respect to the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 29 July 1899, Preamble (<http://www.legal-tools.org/doc/7879ac/>); Convention (IV) respecting the Laws and Customs of War on Land and its annex: Regulations concerning the Laws and Customs of War on Land, The Hague, 18 October 1907, Preamble, see *supra* note 3. F. de Martens was a Russian delegate to the conferences in The Hague in both 1899 and 1907, see Dinstein, 2010, pp. 8–9, see *supra* note 7.

<sup>157</sup> Morton, 1998, p. 699, see *supra* note 118.

<sup>158</sup> Trial Chamber, Interational Criminal Tribunal for Yugoslavia ('ICTY'), *Prosecutor v. Furundžija*, IT-95-17/1-T, Judgment, 10 December 1998, paras. 137 and 168 (<http://www.legal-tools.org/doc/e6081b/>); Trial Chamber, ICTY, *Prosecutor v. Kupreškić et al.*, IT-95-16-T, Judgment, 14 January 2000, paras. 525–526 (<http://www.legal-tools.org/doc/5c6a53/>); Trial Chamber, ICTY, *Prosecutor v. Martić*, IT-95-11-T, Judgment, 12 June 2007, para. 467 (<http://www.legal-tools.org/doc/06634c/>).

<sup>159</sup> International Court of Justice, 1996, para. 78, see *supra* note 122.

derived from established custom, from the principles of humanity and from the dictates of public conscience.<sup>160</sup>

There appears to be no significant difference between the “abhorrence principle” and the “Martens Clause” in regard to the assessment of the legality of WP weapons. The key words are in the reference to “the principles of humanity” and “the dictates of public conscience”. Although these criteria are certainly vague, the formulation is clearly one that would render weapons that cause general revulsion or abhorrence illegal as means of warfare. I will in the following refer to “the Martens Clause” rather than “the abhorrence principle”, since the two seem to overlap completely in the context of discussing the legality of WP weapons.

The main problem when arguing that the Martens Clause can be interpreted as placing concrete restrictions on certain types of weapons is that the terms are too vague to provide clear guidance. What exactly does it mean to be in compliance with the “principles of humanity” and “the dictates of public conscience”? Who decides what the principles of humanity are and what the public conscience is? Dinstein has argued that the Martens Clause cannot constitute an additional standard for judging the legality of specific means and methods of warfare: “General revulsion in the face of a particular conduct during hostilities (even if it transcends fluctuations of public opinion) does not create ‘an independent legal criterion regulating weaponry’ or methods of warfare”.<sup>161</sup> In essence, he argues that the Martens Clause cannot be seen as positive law, although he believes it can function as a form of mission statement to further develop international humanitarian treaty law.<sup>162</sup>

Dinstein’s opinion runs contrary to that of MacLeod and Rogers, who indicate that the “abhorrence principle” could be seen as positive law.<sup>163</sup> Gro Nystuen has claimed that the Martens Clause can be seen as a form of positive law: “It can [...] be said that the Martens Clause constitutes a fundamental humanitarian restriction on permissible weapons, irrespective of how great a military utility value they might have”.<sup>164</sup> Neither of the above has argued, however, that the Martens Clause prohibits WP

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<sup>160</sup> Protocol (I) Additional to the Geneva Conventions of 12 August 1949, Article 1(2), see *supra* note 123.

<sup>161</sup> Dinstein, 2010, p. 9, see *supra* note 7.

<sup>162</sup> *Ibid.*, pp. 8–9.

<sup>163</sup> MacLeod and Rogers, 2007, p. 83, see *supra* note 2.

<sup>164</sup> Nystuen, 2008, pp. 11–12, see *supra* note 91.

weapons as such. There are good reasons for this, as some of the main applications of WP would not be seen as inhumane. For example, there is no reason to believe that the use of WP for creation of a smoke screen in the open field, in which it is unlikely that there are any civilians, would be contrary to the principles of humanity.

It is also questionable whether the Martens Clause can provide any argumentative force behind a claim that certain uses of WP are prohibited when compared with the principles of distinction and of no unnecessary suffering or superfluous injury. It is difficult to think of a case where the use of WP would be considered to be in breach of the Martens Clause, but not of the latter two principles. These principles are also more specific and the principle of *lex specialis* should therefore render the Martens Clause irrelevant for the question of the present legality of WP weapons.

The Martens Clause may have added value if it is read as a “mission statement” of international humanitarian law, rather than as a positive regulation in itself. This is in line with Dinstein’s perception of it.<sup>165</sup> Although one can certainly debate to what extent WP weapons are generally perceived to run contrary to the principles of humanity and the dictates of the public conscience, there are undoubtedly indications of a considerable international sentiment that would favour stronger regulations and possibly a general prohibition of WP weapons. I return to this line of reasoning under the discussion of further codification of IHL in regard to WP weapons.

## **5.2. Legality of the Uses of White Phosphorus Weapons under Customary International Humanitarian Law**

None of the principles of customary international humanitarian law described in this chapter leads to the conclusion that WP weapons should be considered to be prohibited as such. Two of the principles may apply to certain uses of WP weapons, however, namely the principle of no unnecessary suffering or superfluous injury and the principle of distinction. These principles place no greater restrictions on WP weapons than on other types of weapons. Still, certain features of WP weapons indicate that these rules are of particular relevance under certain circumstances.

Particularly significant in regard to the principle of distinction is the area effect of WP weapons that have been designed for the creation of

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<sup>165</sup> Dinstein, 2010, pp. 8–9, see *supra* note 7.



smoke screens. This application of WP necessitates its delivery over a wider area. It is interesting to note that the “area effects” of a weapon have received increased attention in international law in the past decade. The Convention on Cluster Munitions (2008), for example, stresses the need to “avoid indiscriminate area effects” in its Article 2(2)(c).<sup>166</sup> Bonnie Docherty has commented that “[i]n both its narrow exclusions and condemnation of area effects, the convention’s definition of cluster munitions strengthens precedent for more civilian protections in future weapons treaties”.<sup>167</sup> Many incendiary weapons, including WP weapons designed for air-burst, also have indiscriminate area effects.<sup>168</sup> The principle of the Convention on Cluster Munitions does not have the status of customary international law, but can still be a relevant factor to consider when assessing whether specific applications of WP weapons are contrary to international law. For example, the use of WP weapons over populated areas is likely to place civilian persons and objects under considerable risk of injury and damage, as was seen during Operation Cast Lead.

Still, I would not go as far as Human Rights Watch, which claims that “air-bursting WP over populated areas is unlawful because it places civilians at unnecessary risk and its wide dispersal of burning wedges may amount to an indiscriminate attack”.<sup>169</sup> This statement indicates that a general rule can be formulated that it is illegal to use WP weapons over populated areas, in all circumstances. It is conceivable, for example, that air-burst WP could be used as an illuminant and burst at a high enough altitude for it to pose no significant risk to civilian persons and objects. Therefore, the legality of the use of WP weapons must be considered under the circumstances of individual cases. Still, most of the applications of WP weapons described in this paper, if used in or over populated areas could be in violation of the principle of distinction. This includes using it to mark a target, as an obscurant, to create a smoke screen, to “flush out” combatants, and certainly as an incendiary weapon. The danger posed by using WP burster rounds for illumination may be less, due to their high

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<sup>166</sup> Convention on Cluster Munitions, 30 May 2008, Article 2(2)(c) (<http://www.legal-tools.org/doc/7600a8/>).

<sup>167</sup> Bonnie Docherty, “Breaking New Ground: The Convention on Cluster Munitions and the Evolution of International Humanitarian Law”, in *Human Rights Quarterly*, November 2009, vol. 31, no. 4, p. 948.

<sup>168</sup> *Ibid.*, 947.

<sup>169</sup> Human Rights Watch, 2009, p. 2, see *supra* note 9.

optimal air-burst altitude. The same can be said for the principle of no unnecessary suffering or superfluous injury. With a basis in the principles that have been suggested through the SIRUS project for testing whether a weapon should be considered to cause unnecessary suffering or superfluous injury, it is certainly possible to argue that WP weapons fall into this category if used directly against combatants. Indeed, the British military has gone far in advising that such use should generally be avoided.<sup>170</sup> Certainly, the use of WP weapons for setting fire to objects and persons and for “flushing out” combatants can under the circumstances be in violation of this principle. However, there must always be an assessment of the level of military necessity in the circumstances of the individual case, including what other means were available for rendering the enemy combatants *hors de combat*. One cannot *à priori* dismiss a claim that the use of WP weapons for “flushing out” combatants under the circumstances may have been militarily necessary.

## **6. Conclusions on the Legality of the Modes of Application of White Phosphorus Weapons**

What can be concluded about the legality of the five modes of application of WP weapons that were described in the introduction? There are two general conclusions: First, there is no prohibition of WP weapons as such. Second, the risk of violating the principle of distinction seems significant for all the uses of WP discussed here, and more so than many other weapons types because of the “area effect” of these weapons.

The following can be concluded about the specific modes of application of WP weapons, respectively:

1. *Use of WP for creation of a smoke screen.* This is clearly legal when used in the open field with no significant risk of harming civilian persons or objects. If used over a populated area, however, the action may be illegal due to the principle of distinction.
2. *Use of WP burster rounds for illumination.* The same applies to this mode of application as for the creation of a smoke screen, except that the danger to civilians on the ground would normally be less, because the optimal air-burst altitude is as high as 500 meters above ground.<sup>171</sup>

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<sup>170</sup> UK Ministry of Defence, 2004, p. 112, see *supra* note 131.

<sup>171</sup> MacLeod and Rogers, 2007, p. 77, see *supra* note 2.

3. *Use of WP for marking a target.* This mode of application is legal, provided that the principle of distinction is taken into account. The principle of no unnecessary suffering or superfluous injury may also apply, depending on the circumstances.
4. *Use of WP for “flushing out” combatants.* There is no clear prohibition on the use of WP weapons against combatants. There is a case, however, for arguing that the Chemical Weapons Convention prohibits using WP for “flushing out” tactics. Both WP and its by-product, phosphorus pentoxide, have toxic properties that seem to be an integral part of the “flushing out” tactic, which for this reason should be regarded as contrary to Chemical Weapons Convention. The use of WP in this tactic is also in breach of Chemical Weapons Convention Article I(5), because WP is used as an RCA. There is, however, significant disagreement in legal opinion on the matter. Both the principles of distinction and of no unnecessary suffering or superfluous injury may apply, depending on the circumstances. The latter will certainly apply if there are alternative means available, which can be used to achieve the same military purpose.
5. *Use of WP for incendiary purposes.* Protocol III of the Convention on Certain Conventional Weapons is relevant, but it does not render illegal the use of WP weapons against combatants or objects that are legitimate military targets. In its restrictions, Protocol III goes no further than what is already part of customary international humanitarian law with regard to the principles of distinction and of no unnecessary suffering or superfluous injury, except in regard to air-delivered WP weapons. The principle of no unnecessary suffering or superfluous injury renders the application of WP weapons directly against combatants illegal, but only if it cannot be justified as militarily necessary.

The above conclusions will of course not gain universal acceptance. The discussion in the previous chapters shows that there is significant disagreement both among States and in published legal opinions about the regulation of WP weapons and their use in specific cases. This disagreement seems to result in significant controversy upon the actual use of WP weapons, notably in Fallujah in 2004 and in Gaza in 2008–2009. These disagreements are mostly over facts, but are nonetheless indicative of the reality that the law is not clear enough to lead to agreement in the actual cases.

The disagreement over the relevance of the Chemical Weapons Convention for the use of WP in Fallujah, for example, is presumably one of facts, and not of law. However, it should be noted in regard to Fallujah, where the use of WP weapons is fairly well documented, there is no agreement on whether the use of WP was reliant on its toxic properties. One should think that this would be easy to establish, but clearly it is not. In regard to Operation Cast Lead, Human Rights Watch concludes that the use of WP in the specific cases that it documents was illegal – as does the Goldstone report – while the Israelis claim it was legal.<sup>172</sup> Here, international law fails to provide sufficiently clear guidance to resolve a profound disagreement.

It should not be controversial to conclude that there are unsolved problems in regard to the international regulations on WP weapons. It is clear that there is no general prohibition on WP weapons, while it is equally clear that the actual applications of WP weapons are in many cases legally problematic. Furthermore, it seems apparent that the use of WP weapons in the past decade has been widely perceived as unethical, if not actually illegal. This shows that a case can be made for clearer and stronger regulation of WP weapons internationally.

## **7. The Case for International Regulation of White Phosphorus Weapons**

Based on the newspaper coverage of the use of WP in Fallujah and in Gaza, it seems probable that there is a widespread disregard both among governments and in the general public for the use of WP weapons. For example, the Russian Duma (Parliament) issued a statement in 2005 in which it condemned the use of phosphorus bombs under any circumstances and stated that such bombs are banned by international treaties even “under cover of noble aims of the fight against terrorism”.<sup>173</sup> Another example is a statement by Italian Prime Minister Silvio Berlusconi. In response to questions about whether the Italian government would con-

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<sup>172</sup> Human Rights Watch, 2009, pp. 1–3 and 63–65, see *supra* note 9; Goldstone *et al.*, 2009, para. 1919, see *supra* note 11; Hider and Frenkel, 2009, see *supra* note 59.

<sup>173</sup> “Russian Parliament Condemns U.S. Use of Phosphorus Bombs in Iraq”, in *AFX News*, 24 November 2005, cited in Tessier, 2007, p. 340, see *supra* note 2.

demn the US military's use of WP in Iraq he said that "[i]f white phosphorus was used, condemnation is absolutely inevitable".<sup>174</sup>

There is also significant evidence that a large number of States would be positive to stronger regulation of WP weapons. Following the Human Rights Council's probe into Operation Cast Lead in Gaza, the Goldstone report was submitted to the Council on 29 September 2009. One of the recommendations was this:

While accepting that white phosphorus is not at this stage proscribed under international law, the Mission considers that the repeated misuse of the substance by the Israeli armed forces during this operation calls into question the wisdom of allowing its continued use without some further degree of control. The Mission understands the need to use obscurants and illuminants for various reasons during military operations and especially in screening troops from observation or enemy fire. There are, however, other screening and illuminating means which are free from the toxicities, volatilities and hazards that are inherent in the chemical white phosphorus. The use of white phosphorus in any form in and around areas dedicated to the health and safety of civilians has been shown to carry very substantial risks. *The Mission therefore believes that serious consideration should be given to banning the use of white phosphorus as an obscurant.*<sup>175</sup>

This paragraph must be read as a recommendation to seriously consider banning WP weapons altogether. In the recommendation section of the report, the Mission writes that in its view "the use of WP as an obscurant at least should be banned because of the number and variety of hazards that attach to the use of such a pyrophoric chemical".<sup>176</sup> Even though the paragraph actually includes only the use of WP "as an obscurant", the reason for the proposed ban must be not to prevent the use of substances that can obscure military movements, but to prevent the misuse of WP weapons that may be initially designed and intended for use as obscurants.

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<sup>174</sup> "Berlusconi Pledges to Stay as P.M. for Next Five Years", in *Agence France-Presse*, 23 December 2005, cited in Tessier, 2007, p. 340, see *ibid.*

<sup>175</sup> Goldstone *et al.*, 2009, para. 901, see *supra* note 11 (italics added).

<sup>176</sup> *Ibid.*, para 1924.

On 15 October 2009, the UN Human Rights Council passed a resolution on the report, in which it endorsed

the recommendations contained in the report of the Independent International Fact-Finding Mission, and calls upon all concerned parties including United Nations bodies, to ensure their implementation in accordance with their respective mandates.<sup>177</sup>

In this resolution, the Council thus endorsed all the recommendations in the report, without reservations, including the recommendation regarding WP. The resolution was passed with 25 votes in favour, 6 against and 11 abstaining.

The Goldstone report is 575 pages, and one may question whether all countries thoroughly considered all parts of the report equally worth endorsing. Still, the resolution is quite clear, and one must assume that the votes were cast with an understanding in regard to what recommendations were endorsed. However, the *negative* votes that were cast, as well as the abstentions, may have been founded on other reasons than the recommendation regarding WP. One therefore cannot automatically assume that these States were not in favour of the WP recommendation out of the many recommendations contained in the report.

Later that year, on 2 November 2009, the United Nations General Assembly passed a resolution following up the report from the Human Rights Council. The General Assembly did not give indisputable support to the recommendations in the Goldstone report, but it did endorse the report of the Human Rights Council from its 12th Session, which contains the full text of the relevant resolution.<sup>178</sup> The resolution was passed with 114 votes in favour, 18 against and 44 abstentions.<sup>179</sup> As with the UN Human Rights Council, the resolution in the General Assembly was not

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<sup>177</sup> UN Human Rights Council, “The human rights situation in the Occupied Palestinian Territory, including East Jerusalem”, UN doc. A/HRC/RES/S-12/1, 16 October 2009, part B, para. 3 (<http://www.legal-tools.org/doc/a2fd0e/>).

<sup>178</sup> UN General Assembly, “Follow-up to the report of the United Nations Fact-Finding Mission on the Gaza Conflict”, UN doc. A/RES/64/10, 5 November 2009, para. 1 (<http://www.legal-tools.org/doc/4ff857/>); *Report of the Human Rights Council, Twelfth special session (15-16 October 2009)*, UN doc. A/64/53/Add.1, 16 October 2009 (<http://www.legal-tools.org/doc/ac0cf4/>).

<sup>179</sup> “By Recorded Vote, General Assembly Urges Israel, Palestinians to Conduct Credible, Independent Investigations into Alleged War Crimes in Gaza”, in *UN Press Release*, UN Department of Public Information, New York, 5 November 2009, available at <http://www.un.org/News/Press/docs/2009/ga10883.doc.htm>.

mainly about WP weapons, and attitudes toward WP thus cannot explain the voting pattern. However, the recommendation regarding WP is clear in the report, and the wide range of countries that supported the resolution indicates that the call for stronger regulation of WP does not seem improbable.

Another significant indication of States' regard for stronger regulation of WP weapons is the study of State practice in relation to incendiary weapons in general. The 2005 ICRC Study writes that, in the discussions in the UN General Assembly that led to the adoption of the additional protocols to the Convention on Certain Conventional Weapons, incendiary weapons were a sensitive issue. A large number of States advocated a total prohibition of their use, and the majority of those who opposed a total ban did urge strict restrictions in order to avoid civilian casualties.<sup>180</sup> Twenty-three member States submitted formal proposals favouring a total prohibition on the use of incendiary weapons, including against combatants, to the *Ad Hoc* Committee on Conventional Weapons of the Diplomatic Conference leading to the adoption of the Additional Protocols.<sup>181</sup> Official statements in favour of a total ban were also made by a number of States, including China, Madagascar, New Zealand, Peru, Syria, the USSR and the UAE.<sup>182</sup>

However, it was necessary to achieve consensus in the Preparatory Conference for the Convention on Certain Conventional Weapons. A compromise was attempted: to prohibit incendiary weapons against combatants with certain limitations, such as when they would be under armoured protection or in field fortifications, but the United States, and to some degree, the United Kingdom, opposed.<sup>183</sup> The result was the adoption of Protocol III, which scarcely provides any regulation that is stricter or more precise than what was already part of customary international humanitarian law. Still, the process shows that there were a significant number of States that favoured a total ban or stronger restrictions on incendiary weapons. It also seems safe to assume that the regulation of

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<sup>180</sup> Henckaerts and Doswald-Beck, 2005, p. 287, see *supra* note 8.

<sup>181</sup> *Ibid.*, p. 289. Afghanistan, Austria, Colombia, Côte d'Ivoire, Egypt, Iran, Kuwait, Lebanon, Lesotho, Mali, Mauritania, Mexico, Norway, Romania, Sudan, Sweden, Tanzania, Tunisia, Venezuela, Yugoslavia and Zaire (although Kuwait had slightly changed its position in 1975.)

<sup>182</sup> Henckaerts and Doswald-Beck, 2005, p. 289, see *supra* note 8.

<sup>183</sup> *Ibid.*, p. 290.

incendiary weapons would have been stricter if there had been no demand for consensus when negotiating the Convention on Certain Conventional Weapons. Finally, it is worth noting that some of the opposition to stronger regulation came from the United Kingdom, which in its *Manual of the Law of Armed Conflict* (2004) goes further than Protocol III in restricting its own use of WP.<sup>184</sup>

In conclusion, it seems that there may be significant support for imposing tighter restrictions on WP weapons than exist at present, perhaps even a total ban.

### 7.1. Stronger Restrictions: How?

There are at least three ways to impose stronger international restrictions on WP weapons by treaty. First, WP could be added to the Annex on Chemicals of the Chemical Weapons Convention, which lists the identified chemicals. WP could be added to this list, through the procedure described in Chemical Weapons Convention Article XV(4)–(5). Such an alteration would require at least 2/3 majority in favour of a Conference of States Parties.<sup>185</sup> Adding WP to this list would settle disputes about whether WP weapons do in fact fall under the definitions of “chemical weapons” and “riot control agents”. Such a move would clarify the legality of the “flushing out” tactic, but would not end the debate about the other military applications of WP. The controversy arising from the burn effects of WP on humans would remain.

Second, one could seek to alter the protocols of the Convention on Certain Conventional Weapons, either by revising or adding to Protocol III on incendiary weapons, or by adding a separate protocol on WP weapons specifically. Either option can be pursued in the format of a Review Conference of the High Contracting Parties.<sup>186</sup> Because of the formal flexibility of the Convention on Certain Conventional Weapons, the State Parties to the convention would in principle be free to impose any kind of restriction on WP weapons, from light restrictions to a total ban, while keeping in line with the purposes of the Convention.<sup>187</sup> The problem with this path is that alterations require consensus among the High Contracting

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<sup>184</sup> UK Ministry of Defence, p. 112, see *supra* note 131.

<sup>185</sup> Chemical Weapons Convention, Article VIII(18), see *supra* note 1.

<sup>186</sup> The procedures are described in Convention on Certain Conventional Weapons, Article 8(1) and Article 8(2), respectively, see *supra* note 1.

<sup>187</sup> See McClelland, 2005, p. 764, see *supra* note 124.



Parties.<sup>188</sup> With 121 States Parties (as of August 2016), there is a significant risk that the end result will not be as decisive as the majority of States would perhaps like. On the other hand, the Convention on Certain Conventional Weapons Review Conference of 1995 was able to produce a fairly strong Protocol IV that prohibits the employment of laser weapons.<sup>189</sup>

Third, one could seek to construct a convention on WP weapons. This option would have the benefit of avoiding the demand for consensus in altering or adding to the Convention on Certain Conventional Weapons, and would entail a greater freedom in regard to the end result than through alteration of the Chemical Weapons Convention. Examples of similar initiatives have been set through the processes that led to the Land Mines Convention and the Convention on Cluster Munitions. It is worth noting that both issues were first discussed in context of the Convention on Certain Conventional Weapons, but were then taken out of that forum when consensus on satisfactorily tight restrictions proved unattainable.<sup>190</sup> In this way the Convention on Certain Conventional Weapons has been the launching ground for two of the key weapons conventions in international humanitarian law, proving that its Review Conferences are important forums for increasing awareness about central weapons issues confronting the international community.

The third approach, however, is unlikely to lead to new regulations that would be universally ratified in the short or medium term. There is a significant risk that the approach will lead to a further fragmentation of international law, a well-known trend in recent decades.<sup>191</sup> In assessing

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<sup>188</sup> Convention on Certain Conventional Weapons, Article 8(1)(a) and Article 8(2)(b), respectively, see *supra* note 1.

<sup>189</sup> Protocol on Blinding Laser Weapons, 13 October 1995 (Protocol IV to the Convention on Certain Conventional Weapons, 1980, see *supra* note 1) (<http://www.legal-tools.org/doc/a42aa3/>). Morton, 1998, pp. 700–701, see *supra* note 118.

<sup>190</sup> Gro Nystuen: “A New Treaty Banning Cluster Munitions: The Interplay between Disarmament Diplomacy and Humanitarian Requirements”, in Cecilia M. Bailliet (ed.): *Security: A Multidisciplinary Normative Approach*, Martinus Nijhoff Publishers, Leiden, 2009, p. 143; Jozef Goldblat, “Land-Mines and Blinding Laser Weapons: The Inhumane Weapons Convention Review Conference”, in *SIPRI Yearbook 1996*, SIPRI, Stockholm, 1996; Docherty, 2009, p. 941, see *supra* note 167.

<sup>191</sup> The phenomenon of fragmentation of international law was the topic of an in-depth report of the International Law Commission in 2006: Martti Koskenniemi *et al.*, *Fragmentation of International Law: Difficulties Arising From the Diversification and Expansion of International Law: Report of the Study Group of the International Law Commission*, UN

the advantages of the third approach, one would thus need to consider whether it is more desirable to introduce strong regulation for a few States in the hope that others will follow suit – but at the risk of increasing the fragmentation of international law – or to introduce weaker regulation that may be universally acceptable.

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doc. A/CN.4/L.682, 13 April 2006; see also Report of the International Law Commission, Fifty-eighth session (1 May-9 June and 3 July-11 August 2006), UN doc. A/61/10, pp. 400–423 (<http://www.legal-tools.org/doc/50b1e6/>), and Anthony E. Cassimatis, “International Humanitarian Law, International Human Rights Law, and Fragmentation of International Law”, in *International and Comparative Law Quarterly*, 2007, vol. 56, pp. 623–639.

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## **Regulation of White Phosphorus Weapons in International Law**

Stian Nordengen Christensen

Despite widespread criticism, white phosphorus ('WP') weapons have been in use for over a century. The substance WP has a number of military applications, including as an obscurant, a marker of military targets, or an incendiary. Upon contact with human skin, WP can cause severe chemical and thermal burns, and can lead to multiple organ dysfunction syndrome. Such burns are associated with acute pain and significant morbidity.

Since World War I, there have at various intervals been calls for an international ban on WP weapons. This has led individual countries to discontinue their own use of such weapons, but no international initiative has to date succeeded in gathering momentum for a clear and restrictive codification of rules for WP weapons.

This paper discusses existing international regulation of WP weapons, particularly with reference to the Chemical Weapons Convention, the Convention on Certain Conventional Weapons, and customary international humanitarian law. It then proceeds to discuss if more restrictive regulation is needed, and finally how such regulation may be achieved.

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