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**Adverse effects of the illicit movement and dumping of toxic and
dangerous products and wastes on the enjoyment of human rights**

Report of the Special Rapporteur, Okechukwu Ibeanu

Summary

This report focuses on the impact of armed conflict on exposure to toxic and dangerous products and wastes. Although war has always had an adverse effect on the environment, the voluntary or incidental release of toxic and dangerous products in contemporary armed conflicts has an important adverse effect on the enjoyment of human rights. The report not only examines the direct impact of armed conflict, but also its consequences on control of the movement and storage of toxic and dangerous products and wastes.

The report also analyses the human rights dimension of this issue in the particular context of armed conflict, notably those rights which can be adversely affected. It sets out the legal framework applicable to this issue and identifies the potential duty bearers.

The Special Rapporteur ends his report with a series of recommendations which aim to prevent or at least to mitigate the adverse effects of exposure to toxic and dangerous products as a result of armed conflict.

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Introduction

1. In 1995, the Commission on Human Rights adopted its first resolution concerning “the adverse effects of the illicit movement and dumping of toxic and dangerous products and wastes on the enjoyment of human rights”. Commission resolution 1995/81 affirmed that the illicit traffic and the dumping of toxic and dangerous products and wastes constituted a serious threat to the human rights to life and health, and it established the mandate of the Special Rapporteur to analyse the adverse effects on human rights of such phenomena. The Commission has since adopted a resolution each year on this issue (1996/14, 1997/9, 1998/12, 1999/23, 2000/72, 2001/35, 2002/27, 2003/20, 2004/17 and 2005/15). Commission resolution 2004/17 extended the mandate of the Special Rapporteur for an additional three years and Human Rights Council decision 1/102 extended the mandate for a year.¹

2. In his preliminary report to the Commission (E/CN.4/2005/45), Mr. Okechukwu Ibeanu informed the Commission that he intended to adopt a thematic focus in his forthcoming reports. The Special Rapporteur identified criteria to be applied when choosing the thematic issues on which to focus his reports, such as the gravity and extent of the actual or potential human rights violations arising from a particular issue, and whether an analysis from the perspective of victims of human rights violations could add impetus to international efforts to address a particular issue.

3. Previous reports submitted to the Commission pursuant to the mandate of the Special Rapporteur have considered the adverse effects on human rights resulting from both massive and low-level exposure to hazardous chemicals, particularly pesticides. The reports have also presented the Commission with information about the elaborate multilateral legal framework adopted or in the process of development in the sphere of international environmental law with a view to preventing adverse effects on humans and on the environment from exposure to some of the most dangerous chemicals. However, the Special Rapporteur, noting the large number of armed conflicts and their important effects on the environment through notably large-scale dispersion of toxic products, has decided to make this issue the focus of this report.

¹ The following reports have previously been submitted to the Commission by Special Rapporteurs pursuant to this mandate: E/CN.4/1996/17, E/CN.4/1997/19, E/CN.4/1998/10 and Add.1 and Add.2 (report from mission to South Africa, Kenya and Ethiopia), E/CN.4/1999/46 and Add.1 (report from mission to Paraguay, Brazil, Costa Rica and Mexico), E/CN.4/2000/50 and Add.1 (report from mission to the Netherlands and Germany), E/CN.4/2001/55 and Add.1, E/CN.4/2002/61, E/CN.4/2003/56 and Add.1 (report from mission to the United States of America) and Add.2 (report from mission to Canada), E/CN.4/2004/46 and Add.1 (report from mission to the United Kingdom of Great Britain and Northern Ireland), E/CN.4/2005/45, Add.1 and E/CN.4/2006/42 and A/HRC/DEC/1/102.

I. EXPOSURE TO TOXIC AND DANGEROUS PRODUCTS: THE IMPACT OF ARMED CONFLICT

A. Toxic and dangerous products released as a result of hostilities

4. In his last report the Special Rapporteur focused on chronic, low-level exposure to hazardous chemicals.² Previously he has reported on the human rights impact of hazardous chemicals when exposure happens on a massive scale, such as in the context of incidents of pesticide poisoning in developing countries or from accidents like the Bhopal disaster. The Special Rapporteur has also previously reported on the adverse human impact on workers and communities involved in hazardous waste disposal or recycling operations of obsolete ships and electronic wastes in developing countries.³ In this report the Special Rapporteur wishes to draw attention to the adverse effects of toxic and dangerous products in the particular context of armed conflicts. Although weaponized chemicals can be released in the context of armed conflict and unfortunately have already been used, the report will not address this issue because the use of chemical weapons is clearly prohibited by international humanitarian law. Since its prohibition, cases of use of chemical weapons have been limited to very few contexts, and have been widely condemned.

5. It is well known that war generally has an adverse impact on the environment. Throughout the ages war has had severe consequences on the environment, from the destruction of orchards in biblical times or the salting of fertile land during the Punic Wars⁴ to the scarring of vast portions of land caused by trench warfare and the use of massive quantities of explosives in the First World War. However, the potentially harmful consequences of armed conflict on the environment have greatly increased during the last century. This is in great part explained by the growing use and widespread availability of chemicals in industry and everyday life. Another factor in this increase has been the changing nature of armed conflict. In most cases until the First World War, battles consisted of two large armies opposing each other in a remote field. This has largely changed, with battles being fought in cities, close to industrial centres, with factories becoming targets of powerful long distance kinetic weapons. These factors lead to an exponential increase in the risk of stockpiles of toxic products and dangerous chemicals being destroyed and thus released into the environment.

6. Another factor which has contributed to increased risk in recent years is the changing nature of the goals of States and non-State actors when engaging in armed conflicts. Traditionally, wars were fought to conquer territory and to achieve this was to diminish the

² E/CN.4/2006/42.

³ See most recently, E/CN.4/2004/46, paras. 29-43.

⁴ Jay E. Austin and Carl. E Bruch, *The Environmental Consequences of War: Legal, Economic and Scientific Perspectives* (Cambridge, Cambridge University Press, 2000), p. 1.

military capacity of the other party. Today, however, in more and more cases the use of force does not have conquest of territory as an objective but rather seeks to affect decision-making process of the opponent. In these types of conflicts also called “compellance” operations, the party which launches the operations will try to put at risk what the decision makers value the most.⁵ In many of these operations, armed forces are not the exclusive target, but also economic interests such as factories or industrial complexes, which in turn increases the probability of dangerous chemicals being released, further threatening the enjoyment of human rights.

7. Release of toxic and dangerous products during the conduct of hostilities can be either voluntary or incidental. The aforementioned factors increase the risk that an attack on industrial sites will result in the release of chemicals, even if that was not the objective of the party which launched the attack. However, industrialization and therefore increased availability of dangerous and toxic products, has led to their intentional use in the conduct of hostilities. Although these products are for non-hostile purposes, their release into the environment is intended to provide a military advantage.

8. Amongst toxic and dangerous products, oil is one product which has been released in great quantities during armed conflicts. Its importance in modern warfare makes oil stocks the object of attacks and its prevalence in a region affected by a large number of conflicts, namely the Middle East, has increased the targeting of oil facilities during conflicts, with far-reaching environmental consequences. During the 1991 Gulf war, Iraqi forces discharged millions of barrels of crude oil⁶ into the waters of the Persian Gulf in what is believed to have been an attempt to thwart a possible amphibious assault on the Iraqi coast. Marine environments can be affected not only as a result of a voluntary discharge, but also as an incidental effect of an attack, for example, the targeting of oil stocks or power stations located near the coast.

9. Oil discharged in a marine environment can have severe consequences for the economy and the health of the surrounding population. Indeed, people’s health could be adversely affected, notably through inhalation of or contact with oils, but also indirectly when eating contaminated seafood. Concentrations of petroleum contaminants in fish and crab tissue, as well as contamination of shellfish could have potentially significant adverse effects on health.⁷

⁵ Michael Schmitt, *The Law of Armed Conflict: Problems and Prospects* (conference held at Chatham House, 18-19 April 2005). Transcript available at: <http://www.chathamhouse.org.uk/pdf/research/il/ILParmedconflict.pdf>.

⁶ This oil spill is considered by many as the largest in history. After initial estimates of 11 million barrels, most studies estimate the total spill to be between 2.5 and 4 million barrels. William M. Arkin, Damian Durrant and Marianne Cherni, *On Impact: Modern Warfare and the Environment A Case Study of the Gulf War* (Greenpeace, 1991) p. 63.

⁷ UNEP, *Effects of marine oil pollution on economy and human health*, Global marine information gateway <http://oils.gpa.unep.org/facts/economy-health.htm#socioeconomic>.

Furthermore, in some contexts, namely in the Persian Gulf, a large percentage of drinking water is extracted from seawater through desalination. If the seawater is contaminated, it undermines the availability of drinking water. This could be particularly problematic for States such as Saudi Arabia, where 70 to 80 per cent of the population receives fresh water from desalination plants.⁸

10. Fisheries can also be affected. The dissolution of oil creates aromatic hydrocarbons to which marine organisms are extremely sensitive. Going up the food chain, this will affect fisheries as consumption of fish caught in a region affected by an oil spill will be discouraged. If heavy fuel released in a marine environment during an armed conflict sinks and is not removed, it can have a significant impact on seabed resources and in turn have a potentially disastrous effect on fishing and mariculture.⁹ In many coastal regions this will not only have consequences for the immediate availability of food but also for the livelihood of people working in the fishing industry. In some States the fishing industry sustains a significant number of individuals. For example, in Lebanon, some 30,000 people, close to 1 per cent of the population, could depend on this industry.¹⁰ These effects have the potential to become chronic and can last for many years, as the full effects of oil pollution on fish stocks are not immediate. For example, in the case of the accidental spill involving the Exxon Valdez, it took three years after the initial spill for the fish population of the affected areas to collapse.¹¹

11. Tourism is another industry that may suffer following an oil spill. Oil spills that result either from an attack on oil stocks or from a voluntary release, will certainly affect the shoreline. In regions with attractive beaches and resorts, costs to the tourism industry could be high.¹² Hotels, restaurants and other tourist or beach related activities may have to close down, thus affecting the livelihood of those working in this sector. For instance, following a visit to Lebanon the Special Rapporteur on the right to food reported that the oil spill resulting from the bombing of the Jiyeh power station would have long-term effects on the tourism industry which provides employment to a large section of the Lebanese population.¹³

⁸ William M. Arkin, Damian Durrant and Marianne Cherni, *On Impact: Modern Warfare and the Environment A Case Study of the Gulf War* (Greenpeace, 1991) p. 65.

⁹ UNEP, *Effects of marine oil pollution on economy and human health*, Global marine information gateway.

¹⁰ Richard Steiner, *Lebanon Oil Spill Rapid Assessment/Response Mission, Final Report* (International Union for the Conservation of Nature and Green Line, 2006).

¹¹ Ibid.

¹² UNEP, *Effects of marine oil pollution on economy and human health*, Global marine information gateway.

¹³ A/HRC/2/8.

12. Voluntary or incidental oil spills and fires on land are common occurrences in armed conflicts. Although marine environments are particularly fragile, the effects of contamination by oil on land can also be significant and prolonged. Oil spills on land can be the result of a deliberate discharge, for example the filling of trenches with oil to slow down an advancing enemy force, or as a consequence of the destruction of oil wells. The destruction of oil stocks or refineries also has the effect of releasing oil and petroleum products in the vicinity of the targeted facilities. This can lead to the formation of oil lakes, as seen in the Kuwaiti desert in 1991. Hydrocarbons can by their nature be mobile in the ground, even more so when the soil is permeable, which often results in the contamination of groundwater and drinking water supplies.¹⁴ These oil spills also represent a risk to agriculture, especially if contaminated groundwater is used for irrigation purposes.

13. Oil fires, which are prevalent during armed conflicts, present an even more immediate health risk than leaking oil. In most cases they are the consequence of attacks on oil depots, refineries or petrochemical facilities. They can also be the result of the destruction of oil wells or the ignition of oil-filled trenches. Recent examples include the 600 oil wells that were set ablaze in Kuwait by Iraqi forces, the burning of millions of barrels of petroleum at targeted Iraqi refineries in 1991,¹⁵ and the burning of 80,000 tons of oil and oil products at the Pančevo refinery in Serbia following an air strike.¹⁶ Oil is particularly toxic when it burns in large quantities. Indeed, burning oil releases many noxious substances including sulphur dioxide, nitrogen dioxide, carbon monoxide, poly aromatic hydrocarbons, carbon soot and lead.¹⁷ Some of these substances can cause death upon exposure, namely through extreme heat and carbon monoxide poisoning. Furthermore, because of the smoke produced by the fires, the surrounding population can suffer immediate adverse health effects by inhaling toxic fumes. It is reported that hospital attendance records suggest that, following the burning of the Kuwaiti oil wells, there was an increase in upper respiratory tract and asthmatic symptoms.¹⁸ Longer-term adverse health effects are caused by pollutants that have chronic and sometimes carcinogenic effects, such as polyaromatic hydrocarbons and carbon soot. Finally, human health could also be affected by the consumption of contaminated agricultural products or water. Black rain, caused by the smoke of oil fires, can facilitate the penetration of pollutants in the ground and cause long-term damage to crops, soil and groundwater.

14. Widespread availability of chemicals as well as the targeting of industrial sites in modern warfare makes it more likely that chemicals will be released in the event of an armed conflict.

¹⁴ UNEP, *Desk Study on the Environment in Iraq*, (2003), p. 79.

¹⁵ *Ibid.*, p. 65.

¹⁶ UNEP, *The Kosovo Conflict - Consequences for the Environment and Human Settlements* (1999), p. 31.

¹⁷ *Ibid.*, p. 34.

¹⁸ UNEP, *Desk Study on the Environment in Iraq* (2003), p. 68.

Because chemicals are typically stored on site at industrial facilities, if these factories are targeted it could cause a disaster similar in scale to that of the Bhopal incident which, although not linked to an armed conflict, killed thousands. Fertiliser plants are particularly at risk because of the high quantities of ammonia which are stored on location. A direct air strike on liquid ammonia can potentially kill a large number of people because of its high toxicity. During the armed conflict in Croatia, a chemical plant was struck, releasing 72 tons of anhydrous ammonia which forced the evacuation of 32,000 residents of a nearby town.¹⁹ Furthermore, there is concern that the bombing of industrial facilities, which by their day-to-day operations already affect the environment, will further aggravate those pre-existing problems.

15. The targeting of petrochemical facilities also poses a serious threat to the environment because of the sheer number and volume of chemicals which are present on site. For example, in the case of the HIP Petrokemija complex in Pančevo in northern Serbia, which was the object of two air strikes in 1999, several toxic substances were released, including the leakage of 2,100 tons of 1,2-dichloroethane and 8 tons of metallic mercury and the burning of 460 tons of vinyl chloride.²⁰ Dichloroethane contamination is a source of concern because it is classified as a possible human carcinogen. In addition, it is highly mobile in the ground and can easily seep into the groundwater and remain present for up to 30 years. Groundwater samples around Pančevo indicate concentrations several thousand times the 5 microgram per litre limit established by the regulations of the Environmental Protection Agency (EPA) of the United States. Mercury is a highly toxic metal and when released into the environment it can be transformed into a toxic organic form, methyl mercury, which builds up in the food chain, notably through fish. Finally, the burning of vinyl chloride, which is a confirmed human carcinogen, would release highly toxic dioxins, hydrochloric acid, carbon monoxide, and polyaromatic hydrocarbons.

16. Although the use of chemical weapons is prohibited, there have been cases in which industrial chemicals were used as weapons in armed conflicts. These cases involve the release into the environment of a non-weaponized chemical substance in order to hamper the opponent's military operations. Documented cases indicate that such use of chemicals is in general opportunistic in nature.²¹ Indeed, often the temptation to use industrial chemicals in military operations will arise when these dangerous products are already present and available in an area in which military operations are taking place. The widespread use of chemicals in industrial operations and the fact that contemporary conflicts are fought in or near population centres, heightens the probability that parties to an armed conflict will come across dangerous chemicals that they could use. Documented cases further indicate that, in general, it is irregular armed forces that will have the tendency to use or threaten to use industrial chemicals against a militarily superior opponent. The potentially adverse effects on life and health of the use of such dangerous products will depend on the toxicity of the product used, the quantities released into the environment and the proximity of population centres.

¹⁹ Theodore Karasik, *Toxic Warfare* (RAND, 2002).

²⁰ UNEP, *The Kosovo Conflict - Consequences for the Environment and Human Settlements* (1999), p. 31.

²¹ Theodore Karasik, *Toxic Warfare* (RAND, 2002).

17. In today's armed conflicts, facilities producing and transporting electricity are regularly targeted. The main environmental cause of concern about the targeting of those facilities is the destruction of transformers, resulting in the leakage of transformer oil which contains polychlorinated biphenyls (PCBs). When destroyed in air strikes, anything from a few to several dozen tons of PCB can leak from transformers. Leaking transformer oil can result in the contamination of the soil, air, rivers and groundwater.²² PCBs are known to have serious health effects on humans, especially in the case of sustained high-level exposure. They are classified as probable human carcinogens and can cause non-cancer-related health problems such as a reduced functioning of the immune system, muscle weakness, skin changes and low birth rates.²³

18. Another area of concern in recent armed conflicts has been the use of depleted uranium munitions. Because of its density, depleted uranium is used in both munitions and defensive armour. However, depleted uranium is a radioactive toxic heavy metal and can contaminate the environment upon impact. Although recent studies²⁴ conclude that the radioactive danger is very limited, potential problems caused by heavy metal seeping into the ground and groundwater remain. Contamination resulting from the use of depleted uranium munitions will generally be limited to the immediate vicinity of the impact site and as such will not present a problem for the local population. However, if used in densely populated areas or if the contamination caused by depleted uranium is dispersed in the environment, people living in affected areas may inhale contaminated dust or consume contaminated food and drinking water.²⁵ Indeed, if there is heavy firing of depleted uranium rounds in one area, concentrations of uranium in the groundwater may exceed World Health Organization (WHO) limits. Children can potentially be most affected, as they present the risk of ingesting contaminated soil while playing. The toxicity of uranium can affect mainly the kidney and its radioactivity can, in rare cases of serious exposure, present an increased risk of cancer. Although the studies referred to above concluded that the use of depleted uranium munitions will probably not have a major impact on the health of the general population, nothing is known about the long-term effects of exposure to contaminants contained in those munitions.

19. Herbicides are an additional type of dangerous product that have been deliberately released into the environment during armed conflict. Parties to armed conflicts have used herbicides for two main reasons. First, using defoliants with the objective of denying forest cover to enemy forces. The best known and most documented example of this has been the use of so-called

²² UNEP, *The Kosovo Conflict - Consequences for the Environment and Human Settlements* (1999), p. 39.

²³ United States Environmental Protection Agency, *PCBs and Human Health*, Hudson River PCBs <http://www.epa.gov/hudson/humanhealth.htm>.

²⁴ UNEP, *Depleted Uranium in Serbia and Montenegro, Post-Conflict Environmental Assessment* (2002); UNEP, *Depleted Uranium Awareness Leaflet*.

²⁵ WHO, *Depleted Uranium*, Fact sheet No. 257.

Agent Orange and other herbicides during the Viet Nam War. During this operation, over 70 million litres of defoliants and other herbicides were released over Viet Nam, Laos and Cambodia in order to destroy jungle cover and crops.²⁶ A very large number of people, including military personnel from all parties to the conflict as well as between 2.1 and 4.8 million civilians were exposed to these dangerous products during this operation.²⁷ When these herbicides degrade they release dioxins which are linked to numerous health problems. The United States Department of Veteran Affairs lists prostate cancer, respiratory cancers, multiple myeloma, type II diabetes, Hodgkin's disease, non-Hodgkin's lymphoma, chronic lymphocytic leukaemia, soft tissue sarcoma, chloracne, porphyria cutanea tarda, peripheral neuropathy, and spina bifida in children, as illnesses that can be linked to exposure to Agent Orange.²⁸ Although scientific evidence of association remains insufficient, other adverse effects on human health have been linked to the release of dioxin laden herbicides in South-East Asia. These include several types of cancers, birth defects, stillbirths, infant death as well as reproductive system, cognitive, respiratory and circulatory disorders. In addition to direct exposure to dioxins through spraying, indirect exposure to dioxins is also dangerous as the chemical can build up in the food chain, and people may be exposed to contaminated food and water.

20. Secondly, herbicides have also been used in the course of armed conflict to destroy crops. The objective is to deny sustenance to the adversary or to limit revenue generating activities. The herbicides used often contain toxic products that can, depending on their concentration, affect human health. Moreover, although the objective of such tactics is to limit the enemy's access to food, it will often also affect crops which are destined for the civilian population. It is indeed rare to find fields exclusively dedicated to growing food for combatants, therefore the destruction of crops can have a negative effect on the survival of the civilian population. More recently herbicides have been used to destroy drug crops in the context of armed conflicts. However, because the herbicides used cannot distinguish between drug crops and other legitimate crops and because of the use of aircraft to disperse the herbicide, which renders the dispersion less precise, fumigation of coca and poppy crops can result in the destruction of nearby agricultural crops, thus limiting access of the population to food. Furthermore, although there are no definitive scientific studies on the potential health impacts of fumigation, continued reports of adverse effects on human health are cause for concern. Medical services in affected regions have reported a rise in low-level poisoning and eye, skin and breathing problems immediately following the fumigation. There are also concerns that drinking water could be contaminated by the chemicals contained in the herbicides used in such operations. Finally, reports suggest that

²⁶ *In re Agent Orange Products Liability Litigation*, US District Court for the Eastern District of New York, 10 March 2005.

²⁷ *Ibid.*

²⁸ United States Department of Veteran Affairs, *Agent Orange General Information Brochure*, <http://www1.va.gov/agentorange/>.

although the herbicides used to destroy drug crops in an area affected by armed conflict use the same toxic ingredient as that used by commercially available herbicides, the concentration of this active ingredient varies from 1 per cent in herbicides used in agriculture to 26 per cent for those used to destroy drug crops, making it much more toxic.²⁹

21. A final issue of concern is that of war debris. War debris can be a major source of discharge of toxic or dangerous products into the environment. Debris can present a risk because of the numerous toxic and dangerous products which are to be found in building materials or, as mentioned above, on industrial sites. Ash is of particular concern; fires often occur following an attack and if the burning debris contains toxic products, for example paint, solvents or plastic products, it is likely that the ash will be contaminated. If this ash is not disposed of in an appropriate manner it can result in the contamination of the environment surrounding the disposal site, and could potentially adversely affect human health. Toxic materials contained in construction materials can also be dangerous when buildings are destroyed. Asbestos poses a particular problem. For example, in the Middle East, an area greatly affected by armed conflict, asbestos sheeting is often found in buildings. Undisturbed, asbestos does not pose any problems. However, according to a UNEP study, when destroyed, asbestos sheeting can produce asbestos fibre which can be dangerous to the health of persons living in the proximity of destroyed buildings.³⁰ Risks to the health of the local population are increased when there has been much damage to buildings in a limited area, for example in an urban setting. Although, not per se war debris, military remnants of war can also be the source of a release of toxic and dangerous products. This includes unexploded ordnance which may contain toxic and dangerous products, which over time may be released into the environment. Abandoned military vehicles may also pose a threat, as they may be used by the local population at the end of hostilities and may contain toxic materials. War debris, including ash contaminated with asbestos or other toxic products must be treated as dangerous; however, in the rush of clean-up and reconstruction efforts, the threat posed by these materials is often not taken seriously.

B. Negative impact of armed conflicts on the control of toxic and dangerous products and wastes

22. Armed conflicts create great difficulties for States in controlling their territory and protecting their population. As a consequence, armed conflicts can facilitate trafficking in dangerous products and wastes and their illicit dumping. Thus, the contamination of the environment, through soil, water, air or the food chain can lead to the denial of enjoyment of basic rights, such as the right to life, to health, to food, to safe and decent housing, etc. Given the absence of the rule of law in conflict situations, the population often suffers from a lack of access to exact information on toxic and dangerous products and wastes which may affect them. There is also an absence of remedy. The population is thus left without protection. These human rights

²⁹ Accion Ecologica, *Green Alert 115* (September 2001), <http://www.accionecologica.org/webae/images/docs/fumigaciones/alertas/fumigations.doc>.

³⁰ UNEP, *Desk Study on the Environment in the Occupied Palestinian Territories* (2003).

violations come as an addition to those directly attributable to the armed conflict and worsen them by irremediably prolonging their effects. The contamination of the environment by toxic products and wastes can become the cause of further insecurity and a new additional source of conflict.

23. Often during armed conflicts, advancing armies cause the flight of civilians who abandon their towns, villages and farms. In its flight the local population may sometimes abandon medicines and pesticides. These products, when they pass their expiry date, become poisons and as they are abandoned, they are not properly stored and can pose a threat. This is especially the case if they are used by returning civilians, thus having potentially adverse effects long after the conflict.

24. Protracted non-international armed conflicts can also lead to a situation in which there is no longer an effective central Government that can administer the legal order and ensure respect for national and international law. The Government, if one still exists, is thus not able to regulate the flow of toxic wastes and products towards its territory. The best documented case is that of Somalia. According to a UNEP study, since the early 1980s and throughout the civil war, large numbers of shipments of illegal nuclear and toxic waste have been dumped along the Somali coastline, including uranium radioactive waste, lead, cadmium, mercury, and industrial, hospital, chemical, leather treatment and other toxic wastes.³¹ These wastes were in most cases simply dumped on the beach in containers and barrels without regard for the health of the local population. The December 2004 tsunami stirred up much of the waste deposited on Somali beaches and contaminated the surrounding areas. Health problems including acute respiratory infections, dry heavy coughing and mouth bleeding, abdominal haemorrhages and unusual skin chemical reactions, as well as sudden death after inhaling toxic materials were reported.³² Somalia was, according to the same UNEP report, an attractive destination for the dumping of hazardous waste because the country lacked a central Government to safeguard its coastlines and territory. This situation had drawn the attention of the Special Rapporteur in 2005. It is a clear case of violation of human rights, such as the rights to life, to health, to food and to development. It also illustrates dramatically how the armed conflict in the region has facilitated the illicit traffic in and dumping of toxic wastes.

25. In some non-international armed conflicts, controls and limitations on the import and use of toxic and dangerous wastes and products may be overlooked by an armed opposition group controlling part of the national territory. Indeed, armed opposition groups, seeking to finance their operations might be willing to accept the dumping of toxic wastes in exchange for weapons or money to buy weapons. Furthermore, if the region under their control has important mineral resources, they might be willing to authorize the use of toxic and dangerous products in the extraction process, in order to reduce costs and maximize their profits from the exploitation of these resources.

³¹ UNEP, *After the Tsunami: Rapid Environmental Assessment* (2006), pp. 133-134.

³² *Ibid.*

26. Other cases of non-international conflict or internal disturbances can make it difficult for Governments to adequately control their borders, especially if armed opposition groups are active along them. This can lead to an increased risk of toxic and dangerous products being illicitly moved and dumped. Furthermore, in many cases armed conflict or internal tensions foster the emergence of trafficking of all types of goods, including weapons, food, petrol, and other consumer products. The fact that a black market exists makes it easier for toxic and dangerous products to cross borders and to find a market which is hidden from the authorities. The tri-border region of the Ferghana Valley in Central Asia is one example. This region includes a widespread mining and processing industry which releases toxic and dangerous products. Although the region has not known armed conflict per se, there have been numerous internal tensions, which have complicated attempts by the authorities to increase security in the region. In one case of trafficking in toxic products reported by UNEP, mercury was stolen on several occasions from the Khaidarkan Plant and some 150 kg of this highly toxic metal appears to have found an illegal market in the area.³³ Furthermore, situations of armed conflict or internal crisis, combined with widespread trafficking, can facilitate the existence of a climate of corruption which in turn can further weaken the ability of the State to control the illicit movement and dumping of toxic and dangerous products.

27. Armed conflicts can also negatively impact the right to information and participation, which in turn increases the likelihood that toxic wastes and products will be illicitly moved and dumped. Indeed, in situations with little or no governmental presence it is unlikely that a flow of information will exist between the authorities and the population. Awareness of the dangers of toxic wastes and products will allow the local population to resist attempts to dump toxic wastes, thereby alerting the authorities. As noted by UNEP in the case of Somalia, low public awareness about the dumping of toxic wastes in the country was one of the elements that made Somalia an attractive destination for hazardous waste.³⁴ Furthermore, lack of information on the risks posed by toxic products that have been dumped in a region will increase the negative effects on health. People in a war-torn, poverty-stricken society who are often simply trying to survive and earn a living are unlikely to be concerned with health warnings. However, if they remain uninformed they will not even be aware of the need to adopt measures to reduce the risks to their health, thus increasing potentially adverse health effects.

II. HUMAN RIGHTS DIMENSION OF EXPOSURE TO TOXIC AND DANGEROUS PRODUCTS AND WASTES

A. Affected rights

28. The preceding section highlighted the fact that exposure to toxic and dangerous products during armed conflict is not limited to the use of chemical or biological weapons, which are fortunately very rarely used, but particularly involves the use of conventional weapons or the

³³ Environment and Security initiative (UNEP, UNDP, NATO, OSCE), *Environment and Security Transforming Risks into Cooperation* (2005).

³⁴ UNEP, *After the Tsunami: Rapid Environmental Assessment* (2006), pp. 133-134.

release of dangerous industrial products. Though some of the aforementioned reports and sources allude to an impact on human health, there is no detailed reference to the impact on the enjoyment of human rights. Nonetheless, the release of toxic and dangerous wastes and products during armed conflict, raises important questions in relation to several human rights and fundamental freedoms, in particular the right to life, the right to the enjoyment of the highest attainable standard of physical and mental health, the right to food, the right to information and participation, the right to a remedy in case of violations, and other human rights enshrined in the Universal Declaration of Human Rights and other international instruments.

1. Right to life

29. The right to life, which is enshrined in article 3 of the Universal Declaration of Human Rights and article 6 of the International Covenant on Civil and Political Rights (ICCPR), is regarded as the most important right, since without respect for it all other human rights would be devoid of meaning.³⁵ The use in article 6 of the Covenant, of the term “inherent” to describe this right demonstrates its importance. It is also the first right mentioned in the list of rights for which no derogation is permitted, even in times of emergency which threaten the life of the nation (art. 4).

30. The right to life involves at the very least, a prohibition of the intentional or negligent taking of life by the State. Thus the right can be invoked by individuals to obtain compensation in cases in which death results from the release of toxic products into the environment, as long as the responsibility of the State is established. The Human Rights Committee has, nonetheless, adopted the position that the right to life cannot properly be understood in a restrictive manner, and the protection of this right requires the adoption by the State of positive measures.³⁶ In the particular case of the release of toxic and dangerous products during armed conflicts, although the State might not be responsible for the act that caused the dispersion of chemicals in the environment, it can be argued that the State may be subject to an obligation to take all possible measures to ensure the safety of the local population in the aftermath of the incident. These may include inter alia evacuation, assessment of contamination and a clean-up and remediation programme.

2. Right to the highest attainable standard of health

31. The fundamental right to health is indispensable for the exercise of other human rights. Every human being is entitled to the enjoyment of the highest attainable standard of health. The Committee on Economic, Social and Cultural Rights has stated that the right to health is closely related to and dependent upon the realization of other human rights, such as the rights to food, housing, work, education, human dignity, life, non-discrimination, equality, the prohibition

³⁵ M. Nowak, *U.N. Covenant on Civil and Political Rights - CCPR Commentary*, 2nd revised edition (Kehl am Rhein, N.P. Engel, 2005), p. 121.

³⁶ Human Rights Committee, general comment No. 6 (1982), para. 5.

against torture, privacy, access to information and the freedoms of association, assembly and movement.³⁷ The Committee also concluded that “the highest attainable standard of physical and mental health” is not limited to access to health care, but “embraces a wide range of socio-economic factors that promote conditions in which people can lead a healthy life and extends to the underlying determinants of health, such as food and nutrition, housing, access to safe and potable water and adequate sanitation, safe and healthy working conditions and a healthy environment”.³⁸

32. The realization of the right to health in the context of armed conflict and toxic and dangerous products requires States to take all appropriate measures to limit human exposure to toxic products released during an armed conflict. In the case of States whose ability to control their borders and territory is limited by armed conflict, this includes the adoption of laws and regulations concerning the illicit movement and dumping of toxic wastes, as well as the means to implement them. In the case of release or the possibility of release of dangerous products as a result of hostilities, the State which could be affected can adopt preventive measures to limit the health impact of a strike on an industrial complex. For example, one preventive measure could be the emptying of tanks containing very dangerous chemicals at the outbreak of hostilities. Measures following a release into the environment could include rapid clean-up efforts and health warnings to the local population, as well as the availability of specialized health services.

3. Right to adequate food

33. The right to adequate food is part of the broader right to an adequate standard of living, which also includes housing and clothing, and the distinct fundamental right to be free from hunger, which aims to prevent people from starving. This right is linked to the inherent dignity of the human person and is indispensable for the fulfilment of other universal guarantees enshrined in the International Bill of Human Rights. According to the Committee on Economic, Social and Cultural Rights the core content of the right to adequate food implies the availability of food in a quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture.³⁹

34. In the context of contamination by toxic substances during armed conflict, both the availability and quality of food can be affected. Indeed, the use of herbicides can destroy food crops, thus limiting the quantities of food available to the local population. Furthermore, although not all contamination will result in the destruction of crops it can, directly or through contaminated irrigation water, render agricultural goods unsafe for human consumption. The

³⁷ Committee on Economic, Social and Cultural Rights, general comment No. 14 (2000), para. 3.

³⁸ *Ibid.*, para. 4.

³⁹ Committee on Economic, Social and Cultural Rights, general comment No. 12 (1999), para. 8.

contamination of drinking water also constitutes a violation of this right. War-torn regions are often poor, agriculture is one of sustenance, and drinking water is in many cases that which is found at surface level. If this source of food or water is contaminated or destroyed, the impact on the enjoyment of the right to food is far more important than in regions in which most of the food is not produced locally. Realization of this right involves the State taking immediate action to provide food to those who no longer have access to their crops, as well as longer-term measures such as a thorough clean-up of contaminated lands and, if necessary, regular assessments of the level of contaminants in crops and in the soil in order to determine if the food grown is suitable for human consumption.

4. Right to work

35. The right to work is enshrined in article 23 of the Universal Declaration of Human Rights and article 6 of the International Covenant on Economic, Social and Cultural Rights (ICESCR). Every individual has the right to be able to work, allowing him/her to live in dignity. According to the Committee on Economic, Social and Cultural Rights the right to work is a fundamental right which is essential for realizing other human rights and forms an inseparable and inherent part of human dignity.⁴⁰ The right to work plays an important role in the survival of an individual as well as that of his family.

36. The right to work can be affected when toxic products are released into the environment during armed conflict. Examples include fishermen unable to work because fish stocks have been decimated or contaminated by oil pollution; agricultural workers who can no longer work on land which has been contaminated; or people working in the tourism industry who are deprived of work because pollution on beaches has affected the industry. Although the State might not be responsible for the act that caused the dispersion of chemicals in the environment, it can be argued that it should be subject to the obligation to establish a compensation mechanism for the loss of employment, and to adopt measures meant to counter unemployment caused by the situation.

5. Right to information and participation

37. Access to information and communication of information about the effects and exact nature of toxic products released into the environment is essential to guarantee certain other rights, such as the right to life, to health and to adequate food. In some cases, lack of information about the danger posed by the release of a toxic product into the environment may exacerbate the adverse effects on human health by preventing affected people from taking the necessary measures that could mitigate those adverse effects. It may be considered that, due to the threat posed by exposure to toxic chemicals, withholding information from the public may violate the right to receive information, enshrined in article 19 of the International Covenant on Civil and Political Rights. According to one commentator, it is difficult to ascertain whether the right to seek information implies an obligation on the duty bearers in certain cases to take positive

⁴⁰ Committee on Economic, Social and Cultural Rights, general comment No. 18 (2005), para. 1.

measures to guarantee access to State or private information or to make information available to them.⁴¹ Although such a right to be informed is still largely unrecognized in international human rights case law, the development of the modern information and communication society is leading to progressive statutory duties to provide information, particularly on the part of the public administration.⁴²

38. Unlike the current interpretation of international human rights instruments, the Aarhus Convention on Access to Information, Public Participation in Decision-making and access to Justice in Environmental Matters⁴³ adopts a rights-based approach to the issue of access to information by requiring parties to guarantee access to information in environmental matters. Especially relevant to the issue of release of dangerous products into the environment during armed conflict, the Convention provides that in the event of imminent threat to human health or the environment, all information held by the authorities which could enable the public to take measures to mitigate potential adverse effects, should be immediately disseminated to the public.⁴⁴

6. Right to a remedy

39. Where there is a right, there is a remedy. This principle is expressed in article 2, paragraph 3 (a) of the ICCPR, which guarantees victims of human rights violations an “effective remedy”. There are two aspects to the right to a remedy: access to justice and substantive redress. This requires the existence of independent and impartial bodies which have the capacity to afford redress after a hearing which respects due process guarantees. More and more national administrative and judicial bodies throughout the world are giving effect to the right to a remedy in cases alleging violations of constitutional rights to a sound environment, related in some cases to the right to life or to health. The Committee on Economic, Social and Cultural Rights has noted that “Any person or group victim of a violation of the right to health should have access to effective judicial or other appropriate remedies at both national and international levels” and should be entitled to adequate reparation.⁴⁵

B. Duty bearers

40. Although States are without any doubt the primary duty bearers under international human rights law, other actors are present and active during armed conflicts, and as such have an impact

⁴¹ M. Nowak, *U.N. Covenant on Civil and Political Rights - CCPR Commentary*, 2nd revised edition (Kehl am Rhein, N.P. Engel, 2005), p. 447.

⁴² Ibid.

⁴³ Adopted in Aarhus, Denmark, June 1998, entered into force on 30 October 2001.

⁴⁴ Ibid., art. 5.

⁴⁵ Committee on Economic, Social and Cultural Rights, general comment No. 14 (2000), para. 59.

on the enjoyment of human rights. In some of the reports which have retained the attention of the Special Rapporteur, private corporations are linked to the release of toxic and dangerous products into the environment in the course of armed conflict.

41. Some of the cases concern the production of herbicides that have been used in armed conflict. Companies producing herbicides or defoliants destined to be used in the context of armed conflict have been accused of using higher concentrations of toxic chemicals in those herbicides than those used in herbicides intended for regular peacetime use by the agricultural industry. Private corporations can also be involved in the spraying of such herbicides, after being awarded a contract by Government. As such, their actions have a direct impact on the enjoyment of human rights by those living in sprayed areas. Corporations may thus be held liable for their direct involvement in the violation of human rights, or for supplying toxic or dangerous products in the knowledge that their use would lead to a violation of human rights.

42. Private companies have a primary role in the dumping of toxic wastes in countries affected by armed conflicts. By exporting toxic wastes to conflict-affected areas, private corporations may profit from the vulnerability of the State by disposing of toxic waste in an illicit manner. According to a UNEP study, unsafe disposal of toxic waste may cost as little as \$2.50 per tonne in Africa instead of \$250 per tonne for safe disposal in Europe.⁴⁶ The Special Rapporteur shares UNEP's concern as to whether it is "ethically questionable to negotiate a hazardous waste contract with a country in the midst of a protracted civil war and with a factionalized Government that could not sustain a functional legal and proper waste management system".⁴⁷ In order to try to mitigate the adverse effects of the instability caused by armed conflict, the Special Rapporteur recommends that technical assistance be provided to concerned Governments, in order to strengthen the ability of the State to monitor and control the movement of toxic and dangerous products and wastes, particularly during armed conflict and in the immediate aftermath.

43. The Special Rapporteur remains concerned about the lack of accountability of private corporations for actions which have an adverse effect on human rights. In relation to Agent Orange, the defoliant used during the conflict in South-East Asia, several lawsuits have been launched against the manufacturer of this product. The lawsuits launched by plaintiffs from the United States, Canada, Australia and New Zealand were settled out of court in 1984 without the manufacturers admitting any liability. In a recent case involving South Korean veterans, the Seoul High Court concluded that the defoliant contained higher than standard dioxin levels and awarded medical compensation to the victims.⁴⁸ However, seeking redress in a jurisdiction which is not that of the home State of the transnational corporation can pose problems. The

⁴⁶ UNEP, *After the Tsunami: Rapid Environmental Assessment* (2006), p. 135.

⁴⁷ *Ibid.*, p. 134.

⁴⁸ Cases 2002Na32662 and 2002Na32686, Seoul High Court, 26 January 2006. Summary in English available at <http://www.korealaw.com/content/infocus/content.asp?id=69>.

enforcement of judgements awarding compensation can prove to be difficult, especially when the corporation does not have assets in the State of jurisdiction. In addition, in the particular context of armed conflicts, it is hard to imagine bringing a civil action against a company before the courts of the State in which the violation of human rights took place since, in the majority of cases, either the judicial system is virtually non-existent or the Government is an accomplice in the alleged violations. The Special Rapporteur therefore recommends that victims of human rights violations arising from actions or omissions by transnational corporations be allowed to seek redress in the jurisdiction of the domicile of the corporation, and that Governments ensure that corporations domiciled in their countries be held accountable for human rights violations.

44. The Special Rapporteur recognizes that there is an intense ongoing debate as to the extent of the direct responsibilities of private companies under international human rights law, and, therefore, welcomes the work of the Special Representative of the Secretary-General on human rights and transnational corporations and other business enterprises. The Special Rapporteur will continue to study with great interest his findings and recommendations.

45. In the particular context of armed conflict, armed groups are more likely than private companies to have an adverse impact on the enjoyment of human rights. Indeed, as parties to an armed conflict, armed opposition groups take part in hostilities and are thus likely to have an impact, voluntary or not, on the enjoyment of human rights by the population affected by the conflict. In many non-international armed conflicts, armed opposition groups will face better equipped and more powerful governmental forces. This imbalance may encourage armed groups to resort to non-conventional means of combat, using whatever potential weapons they might find in their area of operations, including toxic products. Furthermore, in some contexts armed opposition groups exercise a State-like control over part of the territory of the State, maintaining law and order, providing social services and even in some cases establishing a justice system. In those cases where an armed opposition group exercises a role which is analogous to that of the State and is thereby preventing the legitimate exercise of power by the State, the group should have responsibilities similar to those of the State, notably in protecting the enjoyment of human rights by those present on the territory it controls. In other cases, where armed opposition groups do not exercise State-like control over part of the territory, they still retain an important ability to adversely affect human rights.

46. Although the obligations of armed opposition groups under international human rights law are the object of important academic debates, the Special Rapporteur believes that because of their significant impact on the enjoyment of human rights, armed opposition groups should be considered as duty bearers, and should uphold basic human rights standards.

III. LEGAL FRAMEWORK RELATED TO THE RELEASE OF TOXIC AND DANGEROUS PRODUCTS DURING ARMED CONFLICT

A. International humanitarian law

47. In the particular context of armed conflict, the conduct of the parties is governed first and foremost by international humanitarian law. International humanitarian law and human rights law have the same ultimate goal: the protection of the individual. In some respects, both bodies have similar norms, notably in the area of fundamental guarantees. However some issues are exclusively governed by international humanitarian law, namely the conduct of hostilities.

Several general principles governing the conduct of hostilities are relevant to the problem posed by the release of toxic and dangerous products during armed conflict, but there are also specific rules which address the issue of damage to the environment.

48. The general principles of the conduct of hostilities, namely distinction, proportionality and precautions, apply to attacks which could result in the release of toxic or dangerous products into the environment. The principle of distinction prescribes that parties to the conflict must at all times distinguish between civilian objects and military objectives, and that civilian objects must not be the object of attack. This principle is enshrined in article 52 of Additional Protocol I to the Geneva Conventions⁴⁹ and State practice shows it to be a binding rule of customary international law, applicable to both international and non-international armed conflicts.⁵⁰ Military objectives are defined as objects which by their nature, location or purpose make an effective contribution to military action and whose destruction offers a definite military advantage.⁵¹ This is particularly important in the context of attacks on industrial facilities, which could result in the release of toxic products. Indeed, most of these facilities are civilian in nature; in order for an attack to be legitimate, the destruction of the site must confer a definitive military advantage, for example a petroleum refinery which provides fuel to the military. If the site has no link to military operations and the objective of the attack is to destroy the economic capability of the State, the attack could be deemed to be illegal. It is important to note that the environment and its different elements (i.e. land, forests, oceans) are considered to be civilian objects. Elements of the environment, for example forest cover in a specific area, can be the object of attack only if it is used to conceal military objectives.

49. If an industrial facility deemed to constitute a military objective is to be targeted, the principle of proportionality must be respected by the parties to the conflict. An attack is prohibited if it is expected to cause incidental loss or damage which would be excessive in relation to the concrete and direct military advantage anticipated. Article 51, paragraph 5 (b) of Additional Protocol I codifies this principle and State practice shows it to be a binding rule of customary international law applicable to both international and non-international armed conflicts.⁵² An attack which could cause the release of toxic and dangerous products would violate this principle if the toxic products released could be expected to cause deaths or health problems in the civilian population or damage to civilian objects, including the natural environment, which would be excessive in relation to the military advantage gained from the destruction of the facility.

⁴⁹ 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).

⁵⁰ Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law* (Cambridge, Cambridge University Press/International Committee of the Red Cross (ICRC), 2005), p. 25.

⁵¹ Additional Protocol I, art. 52, para. 2.

⁵² Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law* (Cambridge, Cambridge University Press/ICRC, 2005), p. 46.

50. In any event, the parties to the conflict are bound to respect the principle of precaution. This entails the planners of an attack adopting a number of measures designed to avoid, or limit to the maximum extent, incidental losses in the civilian population or damage to civilian objects. The principle of precaution is codified in articles 57 and 58 of Additional Protocol I and State practice shows it to be a binding rule of customary international law applicable to both international and non-international armed conflicts.⁵³ The measures which can be adopted to comply with this principle include determining that the target is indeed a military objective; that the attack will respect the principle of proportionality; that the means used to attack the target will be the one least likely to cause incidental damage; and that another target, which will afford an equivalent military advantage while posing a lesser threat to the civilian population or objects, is not available. In addition to precautions in attack, parties to the conflict must also take precautions against the effect of attacks. In order to minimize the threat to life and health posed by a possible release of toxic or dangerous products, this could mean avoiding placing potential military objectives within or near densely populated areas. Although this might not be possible for dual use installations, a State would be under obligation, for example, not to place military fuel stocks in an urban area. Finally, the parties to the conflict must give advance warning of an attack which might affect the civilian population, unless the circumstances do not permit. While the Special Rapporteur very strongly discourages parties to an armed conflict from attacking facilities containing toxic and dangerous products under any circumstances, he calls upon them to comply, in all such cases, with the obligation to give advance warning.

51. International humanitarian law also contains several specific limitations on the conduct of hostilities which are applicable to the particular issue of release of toxic and dangerous products. Additional Protocol I and customary international law contain general protections for the environment. In particular, it is prohibited to cause widespread, long-term and severe damage to the natural environment.⁵⁴ There are two aspects to this rule: not only does it prohibit the use of methods and means of warfare which may cause such damage, it also creates a positive obligation to the effect that care should be taken in warfare to protect the environment from this type of severe damage. Article 55 of Additional Protocol I specifically mentions prejudice to the health and survival of the population as a consequence which this prohibition seeks to avoid. This limitation to the conduct of hostilities is particularly applicable to the widespread use of defoliants and other herbicides, as well as to the targeting of facilities which could release a significant volume of toxins capable of severely affecting a large area for a long period. It is important to note that this prohibition is absolute and causing such damage cannot be justified by military necessity.

⁵³ Ibid.

⁵⁴ Articles 35, para. 3 and 55, para. 1 of Additional Protocol I; Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law* (Cambridge, Cambridge University Press/ICRC, 2005), p. 151.

52. Another norm of international humanitarian law which can be related to the release of toxic products is the prohibition of attacks on works and installations containing dangerous forces. This protection is codified in article 56 of Additional Protocol I and article 15 of Additional Protocol II⁵⁵ and State practice shows it to be a binding rule of customary international law. According to these clauses, even if these installations are military objectives, they cannot be the object of an attack if it may result in the release of dangerous forces. However, these dispositions limit this rule to dams, dykes and nuclear power stations, so other types of installations which can also contain dangerous forces do not benefit from the same level of protection. The authors of the recent International Committee of the Red Cross (ICRC) study on customary international humanitarian law mention that other installations containing dangerous forces, such as chemical plants and petroleum refineries, should benefit from the same considerations because an attack on this type of object may cause severe damage to the civilian population.⁵⁶ The Special Rapporteur agrees with this reading and believes that, although the delegates negotiating the Additional Protocols could not agree on other types of installations that should be covered by this rule, logic and the imperative of protection of civilians from the effects of the release of dangerous products, dictates that this rule should apply equally to all works and installations containing dangerous forces.

53. The rule prohibiting the destruction of objects indispensable to the survival of the civilian population is also relevant to the issue of the release of toxic and dangerous products, especially in regard to the spraying of herbicides, intentionally or incidentally destroying agricultural crops. Article 54 of Additional Protocol I and article 14 of Additional Protocol II codify this rule which is also deemed to be of customary nature.⁵⁷ These provisions give some examples of objects indispensable to survival, such as foodstuffs, crops, livestock and drinking water installations. This rule is not limited to destruction; as mentioned by the Commentary on the Additional Protocols, “the verbs ‘attack’, ‘destroy’, ‘remove’ and ‘render useless’ are used in order to cover all possibilities, including pollution, by chemical or other agents, of water reservoirs, or destruction of crops by defoliants”.⁵⁸

54. It should be noted that violations of the aforementioned rules of international humanitarian law amount to war crimes. Indeed the Statute of the International Criminal Court, in addition to violations of the principle of distinction, qualifies as a war crime the act of:

⁵⁵ Protocol Additional to the Geneva Conventions of 12 August 1949, and relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II), (8 June 1977).

⁵⁶ Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law* (Cambridge, Cambridge University Press/ICRC, 2005), pp. 141-142.

⁵⁷ *Ibid.*, p. 189.

⁵⁸ Yves Sandoz and Bruno Zimmermann, *Commentary on the Additional Protocols* (ICRC, 1987), p. 655.

“Intentionally launching an attack in the knowledge that such attack will cause incidental loss of life or injury to civilians or damage to civilian objects or widespread, long-term and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.”⁵⁹

55. The Special Rapporteur welcomes the large number of ratifications the Statute has received and is convinced of its usefulness in contributing to ending impunity for those responsible for the release of toxic and dangerous products in the course of hostilities.

B. Continued application of international human rights law during armed conflict

56. The Special Rapporteur notes that although humanitarian law provides an important legal framework to address the phenomena of release of toxic and dangerous products during armed conflict, norms of international human rights law remain applicable. While international humanitarian law rules will govern the conduct of parties to a conflict in order to avoid the release of toxic products which could have adverse effects on the local population, human rights law will govern the response of Governments after the fact. In other words, in the context of armed conflicts, the humanitarian law regime seeks to prevent the cause of contamination, while human rights law will address its effects. The State affected by the release of toxic and dangerous products has an obligation to guarantee the fulfilment of all human rights which might be adversely affected, including the right to life, to adequate food, to health, to work and to information.

57. The applicability of human rights law to situations of armed conflict has some advantages. Whereas the applicability of humanitarian law will end with the cessation of hostilities, human rights obligations remain applicable in peacetime. This is particularly important in respect of the release of toxic products, as the negative effects of such a release are very likely to continue for a long time after the end of the conflict. Furthermore, seeking reparation for violations of human rights might be easier than for violations of international humanitarian law. Indeed, the bearer of human rights obligations is easy to identify: the main duty-bearer being the State on whose territory the violation took place or the State which exercises control over that territory. In addition, by controlling the territory on which the violation has occurred, the State is in a better position to offer redress for the non-fulfilment of human rights. Violations of humanitarian law may however be the result of an act by an armed opposition group or a foreign State. For this reason, it may be impossible to obtain redress and seeking compensation may be complicated by issues of jurisdiction and the general settlement of claims in peace agreements between States. Proving a violation of international humanitarian law may also be more difficult than proving a violation of human rights law. Indeed, proving violations, especially of the rules related to the conduct of hostilities, has always been a complex issue; for example, how does one prove whether an attack was proportional or not, or that dual use facilities constitute a military objective? Some cases are clear-cut but most fall into a grey area. On the other hand, the non-fulfilment of a human right is fairly straightforward, easily observable and thus easier to prove.

⁵⁹ Rome Statute of International Criminal Court, art. 8, para. 2 (b) (iv), (17 July 1998).

IV. CONCLUSIONS AND RECOMMENDATIONS

58. In conformity with the mandate of the Commission on Human Rights, most of the preceding reports by the Special Rapporteur have focused primarily on the adverse effects on the enjoyment of human rights of populations in developing countries from illicit movements of toxic and dangerous products and wastes. This report focuses not only on violations of human rights occurring in developing countries, but rather seeks to explore the potential violations of human rights in all countries affected by armed conflict. It is important to note however, that a release of toxic chemicals may have more important consequences in developing countries affected by armed conflicts. Indeed, in this context, uncontrolled urban development might place residential areas close to potential military objectives which contain dangerous products at particular risk. Access to medical help for resulting health problems may be more difficult, information about the dangers may not be as accessible and the capacity of the State to conduct an effective clean-up may be jeopardized by lack of resources.

59. Armed conflicts, by their nature, have immediate and grave effects on the enjoyment of many human rights. Naturally, humanitarian organizations, non-governmental organizations and media tend to focus on and respond to these immediate consequences; for example, the killing of civilians, mistreatment of prisoners, rightly receive widespread media attention. This report has sought to show that although the effects might not be as shocking and immediate, the release of toxic products during armed conflicts has grave and long-term impacts on the enjoyment of human rights.

60. There have been many studies on the impact of war on the environment from the legal standpoint, including humanitarian law and environmental law, and also from scientific analysis, such as the studies prepared by the Post-Conflict Branch of the United Nations Environment Programme. However, there have rarely been studies on the impact of this phenomenon on human rights. The Special Rapporteur believes that applying a rights-based approach could contribute to the prevention of such events, while ensuring better management of their negative effects. A rights-based approach might improve access to health services for victims, knowledge of measures that are to be adopted and chances to obtain redress.

61. In addition to calling for a response to the release of toxic products during armed conflict which integrates a human rights approach, the Special Rapporteur would like to make the following recommendations:

- The Special Rapporteur urges parties to armed conflicts to respect international humanitarian law, notably by taking into account the potential consequences of the release of toxic and dangerous products on the life and health of the civilian population and on the environment. When evaluating the lawfulness of an attack, they must be fully aware of their responsibilities for such attacks;
- The Special Rapporteur recommends that States identify and conduct assessments of potential “hotspots” in territories under their jurisdiction or control as soon as hostilities permit, or at the latest at the end of hostilities;

- **The Special Rapporteur encourages parties to a conflict to share information about industrial sites containing dangerous and toxic products, which if released could have consequences on the life and health of the civilian population;**
- **The local authorities should give notice to the local population as soon as information concerning the risks posed by a deliberate or incidental release of toxic products becomes available, to allow the affected population to take measures to safeguard their health;**
- **Sites which have been contaminated following the release of toxic and dangerous products should be the object of a rapid and adequate clean-up procedure. This includes the disposal of contaminated war debris, unexploded ordnance and military equipment in a manner that is consistent with international environmental standards;**
- **In order to mitigate damage to the environment, parties to a conflict should facilitate the access of specialized clean-up crews to the site of dispersion, in particular in the case of oil spills, as soon as hostilities allow or at the latest at the end of hostilities;**
- **The Special Rapporteur welcomes the work of the Post-Conflict Branch of the United Nations Environment Programme, and invites States to collaborate with this unit and to facilitate its initiatives, notably in the conduct of post-conflict assessments and capacity strengthening initiatives;**
- **The Special Rapporteur recommends that technical assistance be provided to States facing non-international armed conflicts or other situations of crisis in order to help them control the flow of toxic and dangerous products and wastes, and encourages regional cooperation in this matter, such as the Environment and Security initiative in Central Asia.**
