

United Nations Development Programme (UNDP)

Hello Delegates!

My name is Ali Nikish and I am the head chair for UNEP. I'm a junior studying biological engineering (Course 20), and I have been involved in MUN since my freshman year of high school in Pittsford, NY. This will be my third time as a chair at MITMUNC. Outside of MUN, I am involved in Greek life and I work as a campus tour guide, so I know a lot of random MIT trivia! Additionally, I work in Feng Zhang's lab at the Broad Institute on a cellular-based autism research project. I'm very passionate about politics, science advocacy, and human rights.

My name is Ihssan Tinawi, and I am a freshman here at MIT. I will be your co-chair for the United Nations Environmental Programme (UNEP) committee. This will be my first MITMUNC, and I hope you are all excited as I am for the hours of debate ahead of us! I plan on majoring in chemical engineering (course 10) with a minor in economics (course 14). I was born in Damascus, Syria and I lived there for 16 years. I then moved to Beirut, Lebanon after the civil war started in my country. In my high school in Lebanon, I participated in MUN, and I attended the Ivy League MUN Conference that was held at the University of Pennsylvania in 2014. At MIT, I am currently the publicity chair in the Arab Student Organization, which seeks to spread awareness about Arabic culture on campus. In addition, I am on the executive team of Amnesty International, a club that discusses human rights issues. I also like to play soccer in my free time.

We encourage each of you to come prepared beyond the information included in this guide, using the sources that we have provided and sources that you find on your own. Remember to research your assigned country's positions on each of these issues in addition to gaining a broader understanding of each topic. Bringing pre-written working papers or clauses to the conference or using electronic devices during committee sessions is prohibited, but you are allowed to bring as many printed resources as you would like, such as official UN documents or articles used in your own research. Position papers must be submitted in advance of the conference to unep-mitmunc2015@mit.edu for award eligibility, and should be written with respect to your assigned country. Please limit these

papers to one page per topic. Do not hesitate to email us with any questions regarding the conference at unep-mitmunc2015@mit.edu and we look forward to meeting you soon!

Regards,

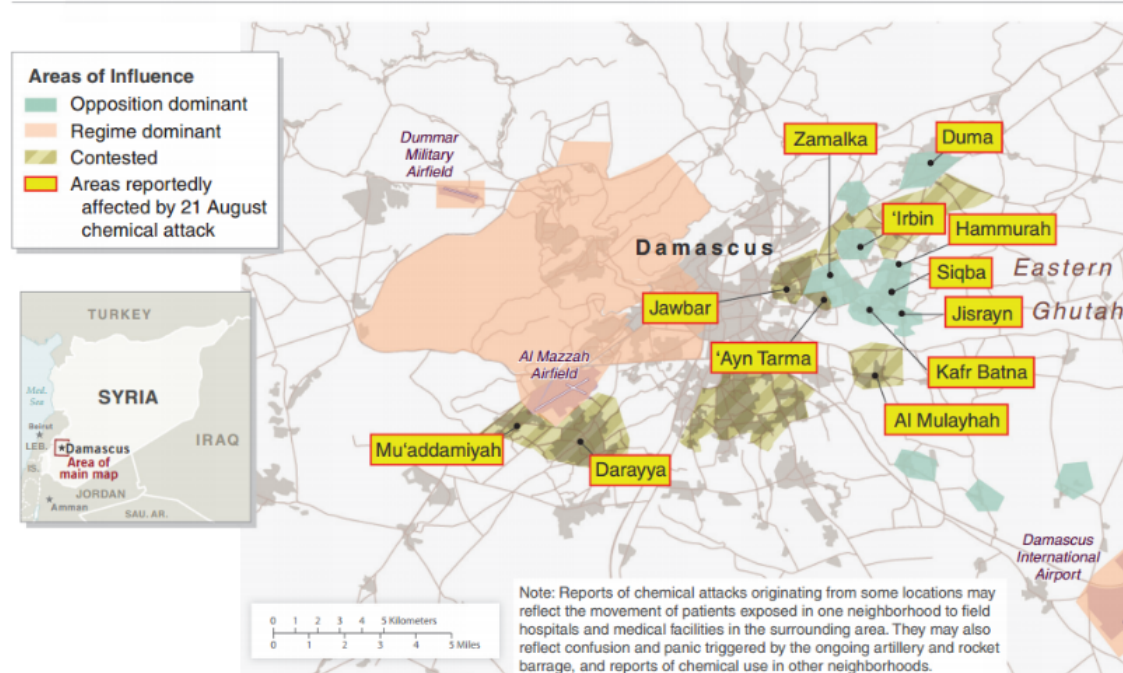
Ali and Ihssaan

Topic A: The Ghouta Chemical Massacre

Introduction

The Damascus suburb Ghouta witnessed a chemical attack on August 21, 2013. Rockets were raining on the opposition-held agricultural suburbs known collectively as Ghouta early in the morning at approximately 02:30¹. Thousands of civilians and some militants showed effects that were symptoms of exposure to chemical weapons. Videos uploaded on YouTube showed people suffering from muscle twitching and loss of consciousness in addition to the graves of those who passed away due to exposure to chemical weapons. Accurate estimates of the death toll were extremely difficult to find due to the ongoing state of war in the country and restricted access to areas besieged by the government. The CIA has estimated that as much as 1,429 people were killed in the

Syria: Damascus Areas of Influence and Areas Reportedly Affected by 21 August Chemical Attack



attacks².

Source: http://www.whitehouse.gov/sites/default/files/docs/2013-08-30_map_accompanying_usg_assessment_on_syria.pdf

¹ <http://www.bbc.com/news/world-middle-east-28870611>

² <http://online.wsj.com/articles/SB10001424052702303914304579194203188283242>

Origin of the problem

In early March 2011 and inspired by the Arab Spring series of demonstrations, Syrian civil activists called for protests against the regime of Bashar al-Assad, which had ruled the country for over 40 years. The government cracked down brutally on the protesters, forcing some people to take up arms. Within months, the rebellion transformed into an armed uprising, and the country soon descended into a state of civil war. Regional and international powers supported their own faction, thus making the military landscape of the conflict more complicated. Since the conflict evolved into a proxy war, it has become more difficult for a political solution to materialize anytime soon.

The opposition forces are deeply divided, and there have been instances of infighting within their ranks. Hardline *jihadists*, who are militants motivated by Islamic religious fervor, form the bulk of the opposition that is trying to oust Assad from his position of power. The Islamic State (IS) made sweeping gains in early summer 2014 and conquered huge chunks of Syria and Iraq. Since then, the United States formed an international coalition to fight the *jihadists* and put an end to their growing power. There is also a more moderate core of rebel fighters, but these are facing danger of collapsing due to lack of support and continuous offensives that are being launched by IS and the government simultaneously.

In late 2011, the moderate opposition was capable of routing the army from several positions across Syria. One of the areas in which the rebels built a stronghold was the Ghouta in the suburbs of Damascus, the capital of Syria. Several neighborhoods in Ghouta came under attacks involving the nerve agent Sarin in 2013, and they remain under siege as the year 2015 approaches. After the attacks took place, the areas that were hit by chemical weapons were incessantly shelled by the government for several hours. Many observers indicated this as a sign that the government was complicit in the chemical weapons attack.

Reactions to the massacre

The United Nations (UN) dispatched a mission to investigate the use of chemical weapons in Ghouta. The UN investigation team was not capable of entering the struck areas until a ceasefire was brokered between the rebels and the regime of Bashar Assad. With the

ceasefire, access was still restricted to a few neighborhoods for a short period of time. The investigation team also came under sniper fire on one occasion³ and this forced them to postpone their visit to a neighborhood that was hit by rockets that carried chemical warheads.

Under international pressure, in addition to the threat of a military strike against the regime by the West, Assad agreed to sign the Chemical Weapons Convention and destroy Syria's chemical weapons stockpiles. The Organization for Prevention of Chemical Weapons (OPCW) formed a joint team with the UN to "oversee the elimination of declared chemical stockpiles and production facilities."⁴

Role of UNEP

The UNEP was tasked by the UN Secretary General to put forth recommendations and advice regarding environmental and logistical risks to destroying the chemical weapons. The UNEP helped develop a plan to ensure the safe transport of the chemical materials to the coastal city of Lattakia, situated in the North-West of a country that is not fully under government control. In addition, the UNEP must evaluate the environmental effects the chemical attack had on the residential areas that were bombed.

Possible solutions

After assessing the military field situation, the UNEP must find a strategy to reduce the risks of transporting chemical materials across war-torn Syria. The UNEP must identify areas of high risk and suggest local ceasefires in areas that rebels control so that the materials can be transported safely, for example. Questions such as "will the weapons be destroyed inside Syria or outside?", "where will the chemical materials be stored?", and "what course of action will minimize risks of material hijacks?", must be addressed by the committee. The UNEP should also inspect the ships and containers that will be used to store the chemical materials. Teams of experts could also be sent to areas affected by chemical materials to inspect the damage and provide the government, rebels, and/or locals with guidelines to deal with the deadly materials. All in all, the strategy must be

³ <http://www.un.org/apps/news/story.asp?NewsID=45701&Cr=Syria&Cr1=#.VHoh6jHF-Sp>

⁴ [http://www.unep.org/disastersandconflicts/portals/155/dnc/docs/qpr/BPR_2014\(Jan-Jul\)_Chapter1.pdf](http://www.unep.org/disastersandconflicts/portals/155/dnc/docs/qpr/BPR_2014(Jan-Jul)_Chapter1.pdf)

coherent and address all possible risks that the joint UN-OPCW mission might face when destroying Syria's chemical weapons stockpiles.

Country Blocks

When it comes to Syria, there is a dichotomy between countries that support Assad's government and countries that are seeking to remove him from power. The countries that are in favor of keeping Assad in power are Russia, China, North Korea, Iran, and Iraq. On the other hand, most European governments, the US, Libya and the Arab Gulf monarchies support the "moderate" or non-*jihadist* rebels. There are also countries that remain neutral on the civil war such as Egypt, Israel, Tunisia, and Lebanon to name a few. Needless to say, almost all countries support the removal of chemical weapons from Syria, but they might disagree on the method in which the weapons will have to be removed and to what extent the government will be held accountable if any emergencies happen.

Conclusion

The mission that the UNEP has been tasked with is no stroll in the park. In order for the mission to succeed, delegates have to craft a plan that deals with possible risks that might arise from transporting hundreds of tons of toxic chemical materials in a country that has been almost completely destroyed by civil war. To do this, the committee must first define these risks and rank them in order of priority and likelihood. The risks of hijacks, chemical spills, or manipulation by the government are incredibly high, for example, and put the fate of the mission on balance. If the mission succeeds, it will become an example for future countries that decide to give up their chemical weapons arsenals.

Recommended readings:

In addition to this background guide and the sources consulted below, it might be beneficial for delegates who have little knowledge of Syria's conflict to consult with the following sources: (Warning: some links may contain graphic scenes)

- <http://opcw.unmissions.org/http://opcw.unmissions.org/>

- <http://www.cnn.com/2013/09/09/world/meast/syria-chemical-weapons-explainer/http://www.cnn.com/2013/09/09/world/meast/syria-chemical-weapons-explainer/>
- <http://www.bbc.com/news/world-middle-east-22307705>
- UN-OPCW investigation team gathering samples from neighborhoods in Ghouta:
<http://brown-moses.blogspot.com/2013/09/un-inspectors-examine-unidentified.html>
- Map of Syria showing areas of rebel/government control:
<http://pietervanostaeyen.wordpress.com/category/maps/>

Sources consulted:

1. "Hope Fades for Syrians One Year after Chemical Attack." *BBC News*. Web. 27 Nov. 2014. <<http://www.bbc.com/news/world-middle-east-28870611>>.
2. *The Wall Street Journal*. Dow Jones & Company. Web. 26 Nov. 2014.
<<http://online.wsj.com/articles/SB10001424052>
3. "Syria: UN Chemical Weapons Team Reaches Inspection Site after Convoy Hit with Sniper Fire." *UN News Center*. UN, 26 Aug. 2013. Web. 26 Nov. 2014.
<<http://www.un.org/apps/news/story.asp?NewsID=45701&Cr=Syria&Cr1=#.VHoh6jHF->
4. Web. 28 Nov. 2014.
<[http://www.unep.org/disastersandconflicts/portals/155/dnc/docs/qpr/BPR_2014\(Jan-Jul\)_Chapter1.pdf](http://www.unep.org/disastersandconflicts/portals/155/dnc/docs/qpr/BPR_2014(Jan-Jul)_Chapter1.pdf)>.

Topic B: Movement of Living Modified Organisms (LMOs)

Introduction and Background

The Convention on Biological Diversity (CBD) opened for ratification at the 1992 Rio Earth Summit, and was put into effect on December 29, 1993. The CBD arose from growing concerns over the sustainability of human actions regarding the environment and a recognition that biodiversity is an essential part of the global ecosystem. The CBD addresses many different issues regarding biological waste, technology, biodiversity, and living modified organisms (LMO's) such as handling, transboundary transport, and risk assessment. Since its inception, the CBD has met on many occasions to revise its two main documents, the Cartagena Protocol and the Nagoya Protocol, most recently in October 2014.¹

The Cartagena Protocol was created by the CBD in January 2000 and was ratified in September 2003. The protocol focuses on "contribute to ensuring an adequate level of protection in the field of the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements."² One of the major aspects of the protocol is the advance informed agreement (AIA), which provides a procedure for ensuring the proper precautionary information regarding LMOs is given to any state prior to importation of an LMO. The AIA is particularly important when considering genetically modified seeds or other organisms that may be introduced into the environment and effect biodiversity.³ The Cartagena Protocol also establishes a Biosafety Clearing-House in order to facilitate the exchange of information and assist in the implementation of the Protocol.²

The Nagoya Protocol was adopted in October 2010 with the objective of "the fair and equitable sharing of benefits arising from the utilization of genetic resources, thereby contributing to the conservation and sustainable use of biodiversity."¹ It establishes a legal framework for providing access to information regarding genetic resources at the domestic level, benefit sharing arising from genetic resources at the domestic level, and establishes

guidelines for international compliance to the CBD.⁴ It works to supplement the CBD and the Cartagena Protocol. At this conference, we ask that you pay particular attention to safety, consent, and biodiversity concerns at the access level; research sharing at the benefits level; and establishing value checkpoints throughout the research, development, innovation, pre-commercialization or commercialization process at the compliance level.

Living Modified Organisms (LMO's)

A living modified organism (LMO) is defined by the CBD as any living organism that possesses a novel combination of genetic material through the use of modern biotechnology. Additionally, modern biotechnology refers only to techniques that cannot be accomplished through natural reproduction. Article 3 of the Cartagena protocol defines modern biotechnology as: "The application of a) In vitro nucleic acid techniques, including recombinant deoxyribonucleic acid (DNA) and direct injection of nucleic acid into cells or organelles, or b) fusion of cells beyond the taxonomic family, that overcome natural physiological reproductive or recombination barriers and that are not techniques used in traditional breeding and selection."² Therefore, the term LMO excludes agricultural products that are selectively bred for resistance to herbicides, but would include crops that have been modified by the insertion of certain bacterial genes for resistance to herbicide treatment.³ It should be noted that the term LMO is often used interchangeably with GMO (genetically modified organism), though the public often perceives GMOs to be associated with modified plants grown either for human consumption or as animal feed.

Modern Biotechnology

Examples of current biotechnology include: plasmid transduction, lentiviral transduction, TALENs, Zinc-finger nucleases, and CRISPR/Cas9. Plasmid and lentiviral transduction are used to insert novel genes into an organism, while the other methods listed can be used to edit the genome. These genome editing techniques are incredibly useful in disease modeling, and can be used in combination with transduction techniques to study the effects of certain gene deficiencies. In particular, the CRISPR/Cas9 system is of interest to this topic because it is highly specific – meaning that CRISPR allows for very accurate genomic editing and gene insertion – and also very new. CRISPR (pronounced

‘crisper’) was discovered in bacteria found in yogurt as a defense mechanism against viruses, and Feng Zhang’s lab at MIT first showed that CRISPR could be applied to human cells in 2012.⁵ By October of 2013, the Zhang lab had established a method for producing CRISPR-modified cells, and the use of CRISPR in labs around the world skyrocketed.

The applications of genome editing expand beyond the scope of the medical field – it can be used in agriculture, fuel production, pollution reduction, and more. George Church, a key developer in the CRISPR system and a researcher at Harvard, is even working on a de-extinction project for the woolly mammoth.⁶

Current Handling, Transport, Packaging and Identification (HTPI) and Risks

Handling, transport, packaging and identification (HTPI) is covered under Article 18 of the Cartagena Protocol. Largely, the HTPI process has to do with proper labeling and accountability procedures for transboundary transport of LMOs²; please review these policies to determine if the guidelines need to be revised from the perspective of your country with consideration given to new biotechnology and possibilities for LMOs.

One of the major risks influencing the HTPI of LMOs is the possibility for LMOs to become exposed to the environment. This could reduce biodiversity, leading to loss of habitat for naturally present organisms. The CBD calls upon its members to consider any potential risks to biodiversity when creating these types of organisms, particularly seeds. Additionally, some LMOs may pose a risk to human life.¹ Please review the risk assessment and management plans laid out by the CBD.

Problems to Address

In this committee session, we want you to consider the following problems with particular regard to new modern biotechnology. Consider bioethical concerns – both through the perspective of loss of biodiversity and potential harm to human health. Many have warned of the potential use of CRISPR as a biological weapon – the high specificity of the system applied to a gene needed for survival has the potential to be used for non-beneficial purposes. Additionally, the ability to quickly modify genes and create LMOs could lead to increased production of LMO-derived food. Once these LMOs enter the ecosystem and reproduce, there is no way to distinguish them from non-LMO derived

foods, and no true way to ensure transboundary transport does not occur through natural methods (such as a seed blown on the wind or carried by an animal).

Secondly, the Nagoya protocol calls for “fair and equitable” benefit-sharing of information regarding LMOs. Considering the bioethical concerns of LMOs and associated methods, how should freedom of information be assessed with respect to potentially dangerous and low cost technology? How can proper HTPI be ensured if there is the potential for leaks in the system? Should a new system for identifying and managing risk be put in place? How can the guidelines set forth by the CBD and UNEP be managed over time and maintain a pace with the rapidly developing field of biotechnology?

Potential Blocs

Knowing which countries have similar and opposing policies to your own is an important part of debate. Blocs for this topic may be distributed regionally. For example, the European Union is against the use of LMOs in food production, but has approved the use of gene therapy for certain diseases; the United States allows LMOs in food production, but does not have any approved gene therapies. (Although, it should be noted that UNEP and the CBD do not discuss pharmaceuticals, or the role of LMOs in pharmaceuticals.) Blocs may also be distributed according to opinions regarding freedom of information, economic interest in LMO use, or importation/exportation policies.

Suggestions for Your Research

It is important to research this topic outside of the framework of this background guide, and we encourage you to research many aspects of biological safety and biodiversity with respect to your assigned country. The sources provided are a great start for general research – and we encourage you to bring a copy of both protocols to the conference – but will not be enough to give you a full understanding of the topic from the perspective of your assigned state. While you do not need to know the exact science behind the creation of LMOs, it is important to understand the basics and limitations, as well as the potential problems and benefits associated with the creation of LMOs. Please also consider your individual nation's:

- access to genetic resources and related technology with respect to biological research

- risks associated with HTPI
- political atmosphere and public opinion regarding LMOs
- use of LMOs in the research and development spheres and the commercialized sector
- opinions on revisions to HTPI, the Biosafety Clearing-House, and any expansions or restrictions your nation may want to consider.
- potential economic benefits or risks associated with LMOs, including biodiversity
- social benefits or risks associated with LMOs, including biodiversity
- current regulation regarding LMOs as well as opinions on both major protocols and any supplementary protocols established by the CBD

Sources

1. Convention on Biological Diversity. www.cbd.int
2. *Cartagena Protocol on Biosafety to the Convention on Biological Diversity* (2000). Secretariat of the Convention on Biological Diversity, Montreal.
3. International Service for the Acquisition of Agri-Biotech Applications. www.isaaa.org
4. *The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity* (2010). Secretariat of the Convention on Biological Diversity, Montreal
5. EmTech: Risks of Gene Editing Drugs Need Study (2014). A. Regalato. MIT Technology Review
6. George Church: The Future without Limit (2014). P. Miller. National Geographic

Additional Reading and Resources

1. Genome Surgery (2014). S. Young. MIT Technology Review
2. CRISPR system can promote antibacterial resistance (2014), Emory Health Sciences. Science Daily. Web <http://www.sciencedaily.com/releases/2014/07/140714152435.htm>
3. Biodiversity A-Z biodiversitya-z.org
4. Dangerous Weapons: a cautionary tale of CRISPR defense (2011). M. Dyall-Smith. Molecular Microbiology, vol 79
5. UNEP homepage unep.org