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# **DANGER TO MANKIND**

## **CHEMICAL AND BIOLOGICAL WARFARE**

*A Series of Statements  
by Prominent Scientists*



**WOMEN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM**  
United States Section / Jane Addams House / 2006 Walnut Street / Philadelphia, Pa. 19103

Philip  
Herman  
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## INTRODUCTION

Throughout its long history, the Women's International League for Peace and Freedom has stood and fought unequivocally for universal and total disarmament and for the universal abolition of war. The League has always been convinced that the abolition of individual weapons is without crucial significance as long as war still exists as a so-called legitimate international institution. However, for observation of the International Human Rights Year, the League is calling special attention to the danger of chemical and biological weapons because it considers these weapons a particularly poignant symbol of the barbarism and cruelty of modern warfare.

In the pages that follow, the monstrous and brutal effectiveness of chemical and biological weapons provides a vivid illustration of the horrors of war. It is our hope that this realization will be an incentive for others to join us in the struggle for the abolition of all wars.

**Otto Nathan, Ph.D.**

*Member, National Board, WILPF*

**May 1-7, 1924—Washington, D. C.**

INTERNATIONAL CONGRESS

WOMEN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM

### **Resolution on Chemical Warfare**

Since the methods of warfare by armies and navies and aeroplanes are becoming obsolete, and their abolition would afford no real protection against the horrors of war unless the new methods—chemical and electrical—are also abolished, and since our opposition to war includes opposition to all methods of waging war, we urge our Sections to appoint committees to investigate the development of chemical warfare and its special dangers, and to organize opposition thereto, both for the sake of ending it and as a means of educating the masses as to the real character of war in general.

## DANGERS OF CBW

Since 1945, intense concentration on the threat of nuclear warfare has tended to obscure the importance, and the dangers, of chemical and biological weapons. Such weapons cover a vast spectrum, from the relatively mild to the highly lethal, capable of producing death and devastation on a vast scale. Moreover, they can be produced far more cheaply and easily than nuclear weapons, so that many small countries, with rather modest technical facilities, could produce them in large amounts.

Fateful policy decisions, regarding the development and use of such weapons, now confront us and other nations. Our own armed forces in Vietnam use "anti-riot" gases, defoliants and herbicides. In 1967, the International Red Cross established the fact that lethal gases had been used by Egyptian forces in Yemen, with numerous civilian fatalities.

The use of chemical weapons by both sides in the First World War evoked passionate protests. The widespread moral revulsion against such weapons was a powerful factor in the formulation of the Geneva Protocol of 1925, which prohibited the use in war of asphyxiating and poisonous gases, bacteriological weapons, and other weapons of similar nature. The terms of the Protocol were emphatically reaffirmed in the United Nations General Assembly Resolution of December 1966. The United States voted for this resolution, although it has never signed the Protocol itself.

Biological warfare, involving the deliberate dissemination of pathological bacteria and viruses, has not yet been tried. Such warfare would invert the achievements of modern public health, with epidemics that would devastate armies and civilian populations, both in the warring nations and in neutral countries. Once an epidemic was started, its future course would be largely unpredictable. It might die out rapidly; it might spread to become a worldwide menace; it might follow some intermediate course. The possible effectiveness of biological warfare is still in great doubt; but the hazards of unleashing it upon the world may be immense.

There may be chemicals, bacteria, or viruses, ready for use in war, more deadly than any that are publicly known. Both in the United States and elsewhere, there is a large body of research, much of it secret, on chemical and biological weapons. The problems presented by such weapons have received too little of the searching

thought that must be devoted to them, if wise policies for their control are to be attained.

I would urge that we maintain firmly the principles of the Geneva Protocol, and resist any use in war of chemical or biological weapons. The wartime use, even of chemicals of rather low toxicity, such as the "anti-riot" gases, could lead through escalation to the later use of increasingly deadly weapons, and might culminate in mass attacks on whole populations. It is in the interest of the security of the United States to avoid taking the first steps that may lead to such disasters; and a decent respect for the opinions of mankind should lead us also to the same conclusion.

**John T. Edsall, M.D.**

*Professor of Biology  
Harvard University*

## **BIOLOGICAL WARFARE: IS IT COMING?**

Since the United States started using so-called "non-lethal" chemical warfare and crop-destroying agents in the course of escalating the war in Vietnam, people have been wondering how far this sort of thing might go. These events have been interwoven with alarming disclosures of the part played by our universities in war, both hot and cold. Questions are being asked: What is special or peculiar about biological warfare? Has it been used? Is it likely to be used? Why do we hear so little about it?

BW is public health upside down. It aims to hurt, to cripple, to destroy—people, useful animals, food and other plants. Even when the immediate targets are animals or plants the final ones are always people, mainly civilians.

Chemical poisons give rise to toxic effects that may be powerful but remain limited. Biological agents cause infection, in which the agents proliferate, so that a few initiating units may develop into a multitude of units during the process.

When we think of disease spreading in whole populations we can think of BW as comparable with nuclear weapons. For large scale BW only agents need be considered that are capable of being dispersed through the air to produce disease by being inhaled into the lungs. No other method of delivery offers equivalent scope and magnitude of potential effect.

The basic ability of BW agents to multiply means that they can be produced in quantity in the laboratory or the munitions plant. Bacteria can be "cultivated" on nutrient materials that are abundant and cheap. They proliferate fast.

An official estimate from the technical journal *Military Medicine* suggested that an area of 6,000 square kilometers, or roughly 2,000 square miles, could be blanketed by a single plane, and that a biological agent could be present in the cloud at a concentration such that every person in the area would inhale 1.5 to 1,500 times the infecting dose. This would be roughly comparable in terms of human casualties with the short-term effects of a 20-megaton fusion bomb. A military spokesman, retired Brigadier General J. H. Rothschild, in his book, *Tomorrow's Weapons—Chemical and Biological*, suggests seeding the prevailing winds that blow down the east coast of China with anthrax or yellow fever and offers a delicately worded opinion that such a measure "could have an important effect as a deterrent to prevent Communist China from initiating a war."

The horrible potentialities of BW that the gamesmen and brinks-men seem to enjoy playing with are modified by uncertainties they seldom stress. Strategic BW does indeed have enormous possibilities for damage; but it also has a few serious deficiencies. For one thing, it is next to impossible to know beforehand what to expect from a strategic BW attack; there is no satisfactory way of testing it in advance. Another problem is its dependence on the vicissitudes of the weather in the attacked area.

The selectivity of CBW for living things is extolled by General Rothschild as a virtue: these weapons, as they say, do not destroy property. The possible results of a strategic BW attack can't be spelled out as has been done for hypothetical nuclear attacks. Estimates of the effect of a strategic BW attack are all wild guesses. A shift of wind or weather might disperse or dilute the cloud or keep it aloft, so that it might fail entirely to reach its intended target but might instead either be returned to the sender or "remain alive for long periods and ultimately fall anywhere." It might, intentionally or not—unpredictably—induce communicable disease which, augmented by wartime dislocation of public health facilities, could go on to world-wide catastrophe, passing beyond human control.

The possibility seems real that despite the uncertainties I have spoken of—after all, we are continually bombing our own forces in Vietnam "by accident"—if we should become convinced that we can't

bring North Vietnam to her knees in any other way, and rather than use nuclear weapons, we might resort to strategic BW in the Hanoi-Haiphong area. We might try to disguise such attacks as naturally occurring epidemics—which the devastation we are wreaking there certainly invites. It must be assumed that our use of the lesser CBW agents in Vietnam has as one of its purposes the preparation of world opinion for the use of greater ones.

Excerpted from MINORITY OF ONE, June 1967.

**Theodor Rosebury, Ph.D.**

*Professor Emeritus of Bacteriology  
Washington University*

## HERBICIDES AS WEAPONS OF WAR

In the last two decades, science has wrought a chemical revolution in agriculture. Chemicals have been produced which can accelerate or retard the growth of plants, kill undesirable weeds, cause leaves to fall, prevent fruit drop, induce premature flowering, increase fruit yield and retard plant senescence. These important new compounds have enabled man to increase his agricultural productivity and thus alleviate, at least for a while, the hunger which threatens a large part of the human race.

Now, unhappily, some of these chemicals are being used as weapons of war in Vietnam. Our government admits that it is using herbicides to destroy food crops and to defoliate the jungle. The object of this exercise is to deprive the Viet Cong of food for sustenance and of jungle cover for infiltration and delivery of supplies. This is the first time in history that extensive chemical warfare has been used against agricultural objectives.

The objections which many scientists have raised against the military use of herbicides in Vietnam are as follows:

- 1) Some of the chemicals used, such as the arsenic-containing compound cacodylic acid, are toxic to men and animals, and should not be sprayed by airplane over the countryside.
- 2) Other compounds, such as derivatives of picolinic acid, have a very long life in the soil, and may thus interfere with agricultural pursuits long after the war is over.
- 3) Even the relatively non-toxic herbicides such as 2,4-D and

2,4,5-T can indirectly cause permanent damage to the soil. For if one defoliates trees, their photosynthesis ceases and they stop excreting organic matter from their roots which feeds the soil microorganisms holding the soil particles together. Then, after the next monsoonal rain, a good part of the topsoil may be eroded away.

- 4) Starvation is not an effective military weapon in a situation like Vietnam. It affects fighting men least, women and children most.
- 5) The use of chemical weapons may lower our psychological barriers to the use of still more horrible weapons of the same type. Why not release viruses and fungi against rice? Why not employ botulinus toxin to poison water and food? Why not immobilize the population for a while with nerve gas? Where is the end of such chemical escalation?

What we need is legislation to restrict and govern the use of chemical and biological weapons of war, in the same way that we are currently attempting to limit the use of nuclear weapons. No military commander in the field should have the right to decide for the American people to use such a weapon.

**Arthur W. Galston, Ph.D.**  
*Professor of Biology*  
*Yale University*

## **CBW: POWERFUL MEANS OF MASS KILLING**

That the arsenal of modern warfare includes chemical and biological weapons raises issues of the utmost gravity for the peace and security of the world. We know that these weapons are capable of vast devastation; infectious diseases could decimate a nation's population; herbicidal chemicals could kill its crops; war gases could cause huge casualties. Like nuclear weapons, biological and chemical agents are instruments of mass killing.

One difference between nuclear weapons and chemical and biological ones is that the latter are not destructive of property. Another important difference is that chemical and biological weapons can be produced much more simply and cheaper than nuclear ones. Infectious agents, for example, can be grown in modified breweries.

As a result, small, technologically weak nations could equip themselves with chemical and biological weapons. Thus, the number of nations that could engage in a war of mass killing is greatly increased by the availability of chemical and biological weapons.

One of the important misconceptions about chemical and biological weapons is that they are specific in their effects. Thus, the military regard a particular chemical as one that specifically induces tearing of the eyes, a "lachrymator"; another chemical is regarded as a specific means of removing leaves from trees, a "defoliant." But this is not the way things work out in nature. Tear gas may cause only tears in a normal adult, but it may kill an infant or an old person. An herbicide may remove leaves, but in doing so it may expose a tropical soil to severe weathering action which may turn the soil into useless stone. Such weapons always have effects which are greater than their supposed targets.

This is particularly evident in the case of biological weapons—infectious bacteria and viruses designed to cause artificial epidemics. Once a disease is started by artificially introducing the infectious agent into an enemy population, it would multiply and spread. *Natural* epidemics are poorly understood and we can rarely predict how fast they will spread and what proportion of the susceptible population will be affected. Moreover, in biological warfare, it is likely that the infectious agents will not be those which occur in natural epidemics, but special variants, selected or modified in the biological warfare laboratory. In this case it would be nearly impossible to be confident about the actual course of an artificial epidemic, once it were started. It might fizzle out, or spread so unexpectedly as to engulf friend and foe alike. This uncertainty will remain, so long as there are no tests, on actual human populations, of artificial epidemics—a project which, even in the brutalized world of today, is likely to be blocked by public revulsion.

In a word, chemical and biological weapons are powerful means of mass killing. But their full power is poorly understood. Any nation which chooses to use these weapons carries the moral burden, not only of the inhumanity of mass killing, but of ignorance of the very power which it dares to wield.

**Barry Commoner, Ph.D.**

*Chairman, Department of Botany and  
Director, Center for the Biology of Natural Systems  
Washington University*

## CROP DESTRUCTION IN VIETNAM

Crop-destroying agents are "good examples of strategic weapons." So said a 1960 report of the Senate Foreign Relations Committee, adding that the eventual result "would be something of the same nature as a blockade cutting off vital foods and supplies."

These weapons are now being used on food crops in Vietnam. By January, 1967, the acreage of croplands sprayed had reached 150,000, not including accidental drifting of sprays onto agricultural land from the defoliation being carried out over a much larger area. South Vietnam, which exported forty-nine million metric tons of rice in 1964, must now import it.

Malnutrition and associated diseases are widespread among Vietnamese civilians; infant and child mortality is high. Although it is impossible to know to what extent the crop destruction program is responsible, there can be no doubt that if the program is continued these problems will grow.

In all famines, small children are affected first and overwhelmingly. They are the first to die; older children and the elderly follow. A general consequence of famine is social disruption. Starving people attempt to journey to other areas to find food, and chaos increases. Weakened by lack of food, they are susceptible to disease, and these forces interact.

In Vietnam, migration has been set in motion by military attacks on villages or fears of such attacks, and by the devastation of agricultural lands and the destruction of food crops. In July, 1967, two million refugees were in government resettlement camps—one in every seven South Vietnamese. Almost all were women, children and older men.

What has been the effect of food denial as a weapon in previous wars? A study of the siege of Paris in 1870-71, the blockade of the Central Powers in World War I, and the siege of Leningrad in World War II, shows that food denials in war affect the fighting men least and last, if at all. From a military viewpoint, the attempt to starve the Viet Cong can be expected to have little or no effect.

Starvation as a weapon of modern warfare has the particular property of inflicting suffering on civilians while doing little damage to the military. It is hardest on children, pregnant and lactating women, and the elderly. Where economic class divisions are sharp, it is par-

ticularly hard on the poor. To destroy crops—with herbicides or in any other way—is therefore to employ a weapon whose target is the weakest element of the civilian population.

A digest of the article: "Starvation as a Weapon: Herbicides in Vietnam," by Jean Mayer. *SCIENTIST AND CITIZEN*, 9:115, 1967. Used by permission.

**Jean Mayer, Ph.D., D.Sc.**  
*Professor of Nutrition*  
*Harvard University*

## RESIST CBW RESEARCH

Chemical and biological warfare research now being conducted throughout this country is being directly applied against Vietnamese, many of whom are made hungry, diseased, and homeless as a result. It contributes to the illusion of some U. S. military and political leaders that they can "win" in Vietnam, that with new technology they can dominate the economic, social, and military development of Southeast Asia. It conditions students and researchers to divorce their technical skills from their human concerns and responsibilities. And it infects more of our society with complicity in this war against Vietnam.

At the University of Pennsylvania's Foreign Policy Research Institute, for example, J. Dougherty, R. Strausz-Hupe, W. Kintner, R. Pfaltzgraff, Jr., and R. Herber are directing a study of "The Role of Biological and Chemical Weapons in the Defense Strategy of the United States," and state in the abstract of their contract "the capability to engage in offensive and defensive biological and chemical operations gives a nation a much stronger position in the struggle for power. . . ." Also at the University of Pennsylvania, Knut Krieger, a chemistry professor who has directed a multi-million dollar CBW project for the Air Force, stated he receives Army field reports from Vietnam and that he has evaluated tests on chemical defoliants. The Cornell Aeronautical Laboratory contributed to this work by conducting "a detailed target analysis to determine anticipated target neutralization requirements." (*Science*, Jan. 13, 1967)

Classification by the military and obfuscation by university authorities make it difficult to prepare a complete and accurate list of all universities which host biological and chemical weapons research.

In addition to the University of Pennsylvania and Cornell University, some of the other places where this work has been recently conducted include the University of California, the University of Illinois, Illinois Institute of Technology, Stanford University, and the University of Washington. Because the entire academic community is closely interconnected, with students and faculty transferring from one place to another, and with an extensive exchange of information and values, the adverse consequences of this research are not confined to the host institutions, but spread throughout the academic community.

Some universities and scientific organizations have skirted the central objections to CBW research by opposing it because it is classified, or because it is done on campus. But whether done covertly or openly, on or off campus, facilitating the use of chemical and biological weapons in violation of U. S. treaty obligations and the opinion of mankind is criminal and immoral and must be resisted.

**William C. Davidon, Ph.D.**

*Assistant Professor of Physics  
Haverford College*

## **CHEMICAL WARFARE—WHAT NEXT?**

At the 21st UN General Assembly, the United States voted in the affirmative for a resolution which calls for strict observance by all states of the principles and objectives of the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases and Bacteriological Methods of Warfare, signed at Geneva on 17 June 1925, and condemns all actions contrary to this objective; and invites all States to accede to the Geneva Protocol of 17 June 1925.

Despite its vote for the resolution, the United States still has not acceded to the Geneva Protocol nor has the administration taken any visible steps in this direction.

The time is past due for the United States either to adhere to the Geneva Protocol or to propose an effective alternative. The attendant public debate would help to clarify many questions about chemical warfare, not least the status of the agents employed in Vietnam.

It is important to bear in mind the distinction between arms

control measures for chemical weapons and prohibitions of their use. The League of Nations labored for years without success in an attempt to enact controls on the manufacture and stockpiling of chemical weapons. Then, as now, the task was complicated by the cheapness and ease of manufacture of these agents and by the difficulty of differentiating non-peaceful from peaceful chemical industry. These aspects of chemical weapons, however, pose no obstacle to a prohibition of their use in war as is embodied in the Geneva Protocol. Indeed, such a prohibition is all the more critical for weapons so readily available as these are and to so many nations. The Arms Control and Disarmament Agency should certainly push forward—and with increased support—in developing plans for control of toxic weapons. But these can be no substitute for U.S. adherence to the Geneva Protocol.

As a further consequence of the difficulties with secure arms control for chemical and biological weapons, governments should be encouraged to declassify all research in this field. A free international flow of information among scientists and physicians would do much to reduce the possibility of a toxic weapons "gap" which could constitute a perceived threat to some nation's security.

Quite apart, however, from such future steps, the United Nations resolution stands in its own right as a statement of international consensus on chemical warfare. While not having the status of a treaty, it does represent a United States commitment to the world community, and it contributes to the customary international law on chemical warfare. Official guidance offered to American military commanders on the law governing chemical warfare should emphasize international restraints, not the lack thereof. The language of Army Field Manual FM 27-10 which states that "the U.S. is not a party to any treaty now in force, that prohibits or restricts the use in warfare of toxic or non-toxic gases, of smoke or incendiary materials, or of biological warfare" should be changed promptly to accord with the position of the United Nations.

By its use of chemical weapons in Vietnam and by its ambiguous posture toward international law on chemical warfare, the U.S. has helped create a climate in which the United Arab Republic felt able to wage gas warfare in Yemen. Whether tear gas and herbicides are prohibited by the Geneva Protocol or not, the U.S. should put an end to the use in Vietnam of these morally and militarily dubious agents. This step, together with political action along lines dictated

by our UN vote in December, 1966, would begin moving America back toward the position of moral leadership on the chemical warfare issue that she held in the years after World War I. The time for action is now.

Excerpted position paper.

**David Savitz, M.D.**

*Physicians for Social Responsibility*

## CHALLENGE TO OUR GENERATION

Six months after Hiroshima, Albert Einstein called upon his fellow scientists to make the world understand in these words:

"We can only sound the alarm again and again. . . . We must never relax our efforts to arouse in the peoples of the world, and especially in their governments, an awareness of the unprecedented disaster which they are absolutely certain to bring on themselves unless there is a fundamental change in their attitudes toward one another as well as in their concept of the future. The unleashed power of the atom has changed everything except our way of thinking."

The beliefs we hold so strongly are mostly established by accident of birth and what we learn, hit or miss, before we are seven years old. Emotionally charged prejudices are propagated from generation to generation by parental and adult prestige and by the use of myths and symbols. The strongest beliefs one holds may bear little relation to the facts and realities of life as related to the common good.

Our habits in relation to aggressive nationalism are deeply ingrained. A man's particular ingroup, be it family, clan, city, religion, political ideology, class or nation, is concerned with status, position and property. He regards the group into which he has accidentally been born as superior to other groups and calls on his gods for assurance and support.

Men, rats and ants are, I believe, the only animals that wage war.

World ethical thinking is hard to change, but it does change. There are a number of human institutions and practices that were supported in the past by the thought and ethics of the best men of their times. These include slavery, infanticide, burning of witches, gladiatorial circuses, and religious human sacrifice. The abolition of these practices was thought to be contrary to human nature, but they

have been abolished. War also is a human institution and we know that it must be abolished or, as the late President Kennedy has said, it will abolish us. This is the great challenge to our species and the decision of our generation can be final in this age of nuclear, chemical and biological weapons.

**Hudson Hoagland, Ph.D., Sc.D.**  
*President, The Worcester Foundation  
for Experimental Biology*

WILPF wishes to thank the eminent scientists who contributed to this brochure.

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**THE NEW YORK TIMES, WEDNESDAY, MARCH 27, 1968**

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## Poison Gas Boomerangs

The tight secrecy with which every country normally surrounds poison gas research, production and testing has recently been broken in the western United States by two terrifying disclosures.

One is the revelation that some seismologists believe Denver is threatened by a serious man-made earthquake in the next few years. This threat is posed by the changes in subsurface conditions produced since 1962 by 160 million gallons of poisonous waste water. The water, a byproduct of poison gas production, was poured down a well drilled more than two miles deep at an arsenal in the city's outskirts.

The second involves the mysterious death in Western Utah of some 6,400 sheep. The circumstances suggest strongly that their deaths were the unplanned consequences of chemical warfare tests a few days earlier at the Army's Dugway Proving Grounds.

## *Geneva Gas Protocol*

AUSTRALIA

AUSTRIA

BELGIUM

BRITISH EMPIRE

BULGARIA

CANADA

CHILE

CHINA

CZECHOSLOVAKIA

DENMARK

EGYPT

ESTONIA

ETHIOPIA

FINLAND

FRANCE

GERMANY

GREECE

INDIA

IRAN

IRAQ

UNION OF SOUTH AFRICA

Protocol for the Prohibition of the Use in War  
of  
Asphyxiating, Poisonous or Other Gases,  
and of  
Bacteriological Methods of Warfare,  
signed at Geneva on 17 June 1925

The text of the substantive part of the protocol reads as follows:

"Whereas the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices, has been justly condemned by the general opinion of the civilized world; and,

"Whereas the prohibition of such use has been declared in Treaties to which the majority of Powers of the world are Parties; and,

"To the end that this prohibition shall be universally accepted as a part of International Law, binding alike the conscience and the practice of nations;

"Declare:

"That the High Contracting Parties, so far as they are not already Parties to Treaties prohibiting such use, accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration."

The Protocol has been in force since 1928. It was ratified by the 42 countries listed prior to World War II. It has been signed but not ratified by:

BRAZIL

JAPAN

NICARAGUA

SALVADOR

UNITED STATES  
OF AMERICA

URUGUAY

IRELAND

ITALY

LATVIA

LIBERIA

LITHUANIA

LUXEMBURG

MEXICO

THE NETHERLANDS

NEW ZEALAND

NORWAY

POLAND

PORTUGAL

RUMANIA

SPAIN

SWEDEN

SWITZERLAND

THAILAND

TURKEY

VENEZUELA

YUGOSLAVIA

UNION OF SOVIET SOCIALIST REPUBLICS

The WILPF hopes that upon reading this pamphlet you will feel impelled to write to government leaders to take immediate steps to transform installations working on biological and chemical weapons into research centers for the eradication of hunger and disease; and to destroy all existing stockpiles of chemical and biological weapons. We also urge you to call upon your Senators to ratify the 1925 Geneva Protocol outlawing chemical and biological warfare.

- ☐ Enclosed is my check for.....pamphlets (price 25¢ each; 12 for \$2.50).
- ☐ Enclosed is my check for.....as a contribution toward making it possible to distribute this pamphlet widely.

Name.....

Address..... Zip.....

**Women's International League for Peace and Freedom U.S. Section**

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