

# F. A. S. NEWSLETTER

Volume 23, No. 3

March, 1970

----- to provide information and to stimulate discussion. Not to be attributed as official FAS policy unless specifically so indicated.

## PATENT GRANTED ON CONTROLLED FUSION METHOD

Scientists at the Cornell Aeronautical Laboratory have been granted a patent for a method of producing power by controlled nuclear fusion. Although a working model has not yet been built, the inventors regard the process as the first practical means of achieving fusion. According to Patent 3,489,645, laser beams will apply intense heat to a hydrogen fuel such as deuterium, causing the nuclei to join, or coalesce, and release energy. By the Cornell method, laser beams of moderate intensity are concentrated on a drop of fusion fuel in a vacuum chamber, and an exploding shock wave results. Stronger laser beams are then directed at the fuel, creating an inwardly moving compression wave. The colliding waves, through the increased temperature and density, are said to create the fusion. Power can be derived through heat transfer, or by creation of electricity from a flow of charged particles.

(N.Y. Times, 17 January 1970.)

## LITTLE OR NO CHANGE INDICATED IN U.S. CBW ACTIVITIES

*A Report by National Action/Research on the Military-Industrial Complex (A Special Project of the American Friends Service Committee)*

On November 25 President Nixon held a press conference on chemical and biological warfare (CBW). This speech has been publicized as a major change in U.S. policy and a move on the President's part toward a ban on CBW agents. However, a close analysis of the President's speech reveals that it requires virtually no change in either our current use of chemical weapons in Vietnam, or our research, development and production of these and other CBW munitions.

In specific, the President made the following recommendations:

**AS TO OUR CHEMICAL WARFARE PROGRAM, THE U.S.: \*REAFFIRMS ITS OFT-REPEATED RENUNCIATION OF THE FIRST USE OF LETHAL CHEMICAL WEAPONS.** (emphasis added)

This is not a ban on chemical weapons: It is a restriction on first use. However, even this restriction does not cover all chemical weapons; it only covers the ones that the U.S. is not currently using. The range of weapons defined by the U.S. as *non-lethal* includes all gases (even mustard gas) except the nerve gases (GB and VX). Gases like adamsite (DM), which is being used in Vietnam, are classified as "riot control agents," even though the Army says that DM is not to be used "in any operation where deaths are not acceptable."<sup>1</sup> Even the tear and lung gases which do not kill their victim directly, are used to drive him into the open where he can be killed by aircraft or gun fire.<sup>2</sup> Yet they are exempted, as "non-lethal" weapons, from the President's restrictions.

"First use" of chemical herbicides and defoliants will also continue, despite the fact that they are used to destroy food crops to starve "the enemy," and to destroy the jungle cover to improve kill ratios. The substances used for these purposes include two arsenic compounds and 2, 4-D and 2, 4,5-T—the latter banned in the U.S. following a study which showed malformations and birth defects in all of the litters of the test mice administered the chemical during preg-

## NIXON INCLUDES TOXINS IN CBW BAN

*The following article appeared in the N.Y. Times of 15 February 1970.*

President Nixon today extended his ban on the production and use of biological weapons to cover military toxins—poisons that are biologically produced but are used as chemical warfare agents.

The White House characterized the order as "another significant step, which we are willing to take unilaterally, to bring about arms control and to increase the prospects of peace."

White House officials at the President's weekend retreat here conceded that the order was aimed to close a loophole left open last November 25, when Mr. Nixon renounced United States use of germ weapons but reserved the right to produce chemical warfare agents for defensive purposes only.

"It was a slip-up," one White House official said.

All the same, the President's order today represented a victory for opponents of chemical and biological warfare, who had feared Mr. Nixon would be swayed by the military into permitting continued production and stockpiling of toxins.

The confusion over whether toxins were included in the President's November renunciation of germ weapons resulted from the fact that toxins are dead, but poisonous, products of bacteria. Although they cannot now be produced without first producing bacteria, which Mr. Nixon ruled out, the Pentagon was said to have sought to keep toxins in the military arsenals on the ground that they would be used in the same way as chemical agents.

Unlike other biological agents, toxins are not communicable from one individual to another, meaning that they would not have the potential for producing "global epidemics" which the President cited as the chief reason for eliminating germ weapons.

The Pentagon sought to retain toxins but the State Department and the Arms Control and Disarmament Agency were said to have urged Mr. Nixon to ban them. The diplomats reportedly feared continued production of toxins would undercut both the practical and propaganda effects of the President's decision to renounce germ warfare.

... The United States continues to maintain that tear gas and chemical defoliants, used in South Vietnam, are not covered by international agreements against first use of chemical weapons. . . .

nancy. The study followed reports in Saigon newspapers of high rates of birth defects in the Vietnamese countryside.<sup>3</sup>

The "first use" of such chemical warfare munitions as napalm and white phosphorous, classified as incendiaries, will also continue.<sup>4</sup>

**\*EXTENDS THIS RENUNCIATION TO THE FIRST USE OF INCAPACITATING CHEMICALS.**

The only CW munition classified by the Army as "incapacitating" is BZ, a psycho-chemical similar to LSD. The Pentagon has admitted that BZ is terribly expensive (at \$20 a pound, it takes 10 tons to knock out a battalion<sup>5</sup>), and it seems, from trial uses in Vietnam, that the gas has been found to be unreliable. The French newspaper L'Express reported a use of BZ by the U.S. Army's 1st Cavalry (Airmobile), March 14, 1966, in the Vietnamese town of

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## ANNOUNCEMENT

The Federation of American Scientists is broadening its lobbying efforts in Washington. It is searching for two scientists to educate and advise the Congress and the Executive Branch on matters of importance to scientists. Expertise on arms race issues, traditionally of importance to FAS, are reasonably well represented in Washington, but environment problems and questions of science policy are not. We are looking for scientists on sabbatical, since FAS funds cannot now cover support. Each scientist will be, within wide limits, his own boss, and will be responsible for finding useful things to do within his area of expertise. A small Washington office will be of some assistance. The scientists will have the title of Consultant-in-Residence, Federation of American Scientists. The executive director of FAS will be responsible for orienting each consultant and will help him get started. Applications should be sent to Jeremy J. Stone, 264A G Street, S.W., Washington, D.C. 20024.

## BOOK NOTES

The Union of Concerned Scientists has prepared three booklets for distribution, entitled ABM ABC, MIRV, and CBW. The booklets are 16 pages of background and evaluation of the subjects. They can be purchased separately for 25¢ each from UCS, P.O. Box 289, MIT Branch Office, Cambridge, Massachusetts 02139, or in bulk in lots of 250 for \$25.

The Atomic Energy Commission, as a supplement to its annual report to the Congress, has published a summary of AEC-sponsored basic research projects, under the title *Fundamental Nuclear Energy Research*. It is for sale from the U.S. Government Printing Office for \$3.75. The volume presents selected projects.

## LITTLE OR NO CHANGE—continued from Page 1

Bongson.<sup>6</sup> The problem with BZ is that it affects each person differently. While it makes some people passive, others may act violently irrational. So we are faced with a situation in which the President plans to extend the no-first-use ban to a weapon which we have reportedly used first and found to be ineffective.

CONSONANT WITH THESE DECISIONS, THE ADMINISTRATION WILL SUBMIT TO THE SENATE, FOR ITS ADVICE AND CONSENT TO RATIFICATION, THE GENEVA PROTOCOL OF 1925 WHICH PROHIBITS THE FIRST USE IN WAR OF "ASPHYXIATING, POISONOUS OR OTHER GASES, AND OF BACTERIOLOGICAL METHODS OF WARFARE." (emphasis added)

## FAS NEWSLETTER

Published monthly except during July and August by the Federation of American Scientists, 2025 Eye St., N.W., Washington, D. C., 20006. Subscription price: \$2.00 per year.

Chairman ..... John Rasmussen

The FAS Newsletter is prepared in Washington.

Editor: Judith Eckerson.

The FAS, founded in 1946, is a national organization of scientists and engineers concerned with the impact of science on national and world affairs.

Sources of information (given in the articles in parentheses) are for further reference. Items reprinted directly from other publications are designated as such in an introductory paragraph.

This treaty, which was never ratified by the Senate largely due to pressure from the chemical industry, the American Legion, and the Army Chemical Corps, provides a ban on first-use-in-war but does not prohibit research, development, production or stockpiling of CBW munitions.

In addition, the Nixon Administration does not consider tear gases and herbicides to be covered by the Protocol, even though two-thirds of the signatory nations (including Britain, France and the USSR) have officially interpreted the ban on "other gases" as inclusive of such weapons.<sup>7</sup> Thus, our ratification of the Protocol, if we impose these limitations, will serve to weaken the ban, while not affecting our current chemical warfare program in Vietnam.

**BIOLOGICAL WEAPONS HAVE MASSIVE UNPREDICTABLE AND POTENTIALLY UNCONTROLLABLE CONSEQUENCES. THEY MAY PRODUCE GLOBAL EPIDEMICS AND IMPAIR THE HEALTH OF FUTURE GENERATIONS. I HAVE THEREFORE DECIDED THAT:**

**\*THE U.S. SHALL RENOUNCE THE USE OF LETHAL BIOLOGICAL AGENTS AND WEAPONS, AND ALL OTHER METHODS OF BIOLOGICAL WARFARE.** (emphasis added)

This statement sounds sweeping indeed, at first reading. However, biological weapons constitute less than 10% of the U.S. arsenal of CBW agents (the rest being chemical). Furthermore, at least part of this BW arsenal will not be covered in the ban because of a re-defining of biological toxins which was one result of U Thant's report to the U.N. General Assembly in July, 1969. That report, compiled by chemical warfare experts from all over the world, reclassified the non-reproductive toxins, which are produced by living organisms, as chemical, rather than biological, warfare agents.<sup>8</sup>

It was discovered that the first chapter of the U.N. report, which included the changed definition, was written by a team headed by Dr. Ivan Bennett, Director of the New York University Medical Center. He is also Research Contract Director of the Army Chemical Corps and an advisor to the Army on epidemiology and pathology.<sup>9</sup> His staff included three Pentagon officials, and the first draft of Bennett's chapter was written by the Army's CBW experts, according to Representative Richard McCarthy, Democrat of New York.<sup>10</sup>

In a telephone conversation with Dr. Bennett, he reported that his staff, even while in Geneva working on negotiations of the final draft, were in telephone contact with the Pentagon "every day." However, he stressed that his participation in the report was that of a private scientist, and thus he could not speak for the Pentagon as to whether they accepted the new definition.<sup>11</sup>

Dr. Benjamin L. Harris, Deputy Assistant Director of Chemical Technology of the Office of Defense Research and Engineering, was then contacted about the new definition. He acknowledged that until quite recently the military definition of biological warfare was the "employment of living organisms, *toxic biological products*, and plant growth regulators to produce death or casualties in man, animals or plants; or defense against such actions."<sup>12</sup> However, he said, now that the U.N. committee of "international experts" had decided on this new, clear definition, "*we certainly subscribe to it.*" (emphasis added)

He was then asked specifically whether the stockpile of 20,000 Botulinum bullets at Pine Bluff Arsenal (revealed in recent press reports)<sup>13</sup> would be destroyed. Dr. Harris answered: "What we have and where we have it is still classified."<sup>14</sup>

Botulinum is the deadly toxin given off by Botulism bacteria. Such dead toxins, unlike live germs, would not set off epidemics that might spread beyond the "hostile territory," nor would they produce the "massive, unpredictable and potentially uncontrollable consequences" which the President cited as the drawbacks to the employment of germ warfare weapons.

Thus, far from being banned, as the President implied,

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**LITTLE OR NO CHANGE**—continued from Page 2

the use of germs in warfare has merely been refined. We now produce a "chemical" agent extracted from live germs to induce the disease directly. This allows us to apply the disease to selected targets rather than to rely on random infection. Botulinum bullets, then, could be effective assassination or counterinsurgency weapons which would need only to nick their victims to produce death by Botulism, the disease induced by the powerful toxin.<sup>26</sup>

The President has renounced the militarily unreliable part of the U.S. biological arsenal, and has reclassified the useful part as "chemical substances."

**\*THE U.S. WILL CONFINE ITS BIOLOGICAL RESEARCH TO DEFENSIVE MEASURES SUCH AS IMMUNIZATION AND SAFETY MEASURES (emphasis added)**

This statement provides a wide-open loophole for biological research and development (R&D). It practically negates the President's biological warfare renunciation, at least in respect to its impact on our current activities, since it has been traditional to define biological research and development as "defensive."

For example, the day of the President's speech, Secretary of Defense Melvin Laird told Senator Charles Mathias, Jr. (R-Md.) that "there will be no major impact on the basic research in defense systems and safety" being conducted at Fort Detrick, Md., the nation's biological warfare research and development center. (Among the diseases involved in the work at Detrick are pneumonic plague, tularemia, brucellosis, anthrax, encephalitis, glanders, Rocky Mountain spotted fever, undulant fever, psittacosis, cholera, botulism and coccidioidomycosis.)<sup>15</sup> In fact, the Deputy Commanding Officer at Fort Detrick, Colonel Lucien Winegar, "said it would be 'fair to assume' that Detrick will continue to produce dangerous organisms that could be used offensively, since any defense against biological weapons involves the production of harmful agents that are potentially available to an enemy."<sup>16</sup>

As "defense" involves producing "offensive" diseases, so "offense" involves "defensive" inoculation of one's own troops. Thus the lines between defense and offense are blurred to the degree that the distinction becomes meaningless. It would seem that Rep. Richard McCarthy's statement made at Tufts University on September 15, 1969, would still hold true even after the President's speech. McCarthy said:

... there is very little of a defensive nature in our biological warfare program.

We do not have any defense for our civilian population against a germ attack. We do not even have an effective warning system against attack with biological agents. . . . Even our armed forces have no effective means of protection against biological warfare. . . . We can conclude from the lack of a defense that our germ warfare policy is one that would defend against biological warfare by the threat of a biological attack in retaliation.<sup>17</sup>

Finally, we come to a point in the President's speech which suggests a small change in our actual activities, rather than merely a change in our rhetoric.

**\*THE DOD HAS BEEN ASKED TO MAKE RECOMMENDATIONS AS TO THE DISPOSAL OF EXISTING STOCKS OF BACTERIOLOGICAL WEAPONS.**

Here the President, while not ordering any specific action has asked the Department of Defense to make recommendations about possible actions. It is hard to tell how this will affect our biological warfare facilities. Fort Detrick (the largest BW center, which had a 1969 budget of \$421.5 million<sup>18</sup>) claims that it does not stockpile weapons,<sup>19</sup> but maintains only "limited components for biological testing." Pine Bluff Arsenal in Arkansas (which has 273 refrigerated "igloos" for storage, and biological production facilities to mass-produce its biological agents if they are needed)<sup>20</sup> may have a small portion of its activities cut back, but the Base Commander, Colonel Clyde L. Friar,

says: "We have no plans at this time. . . . It will be Laird's job and that of the DOD to come up with the procedures."<sup>21</sup> If this base does give up storage of germs for biological warfare it would still retain its stocks of chemical and nerve gas weapons, its stocks of bacteria-produced "toxins," its production facilities for incendiaries and its "defensive" biological research and development.

The Army's largest testing area, the Dugway Proving Grounds in Utah, apparently will not be affected. In fact, the President said nothing at all about the halting of open-air testing such as the kind that killed 6000 sheep outside of Dugway last year.

While little change is indicated in these three leading U.S. CBW installations, there have been reports of cuts in CBW staffs in some areas.<sup>22</sup> Such reports, however, should be carefully scrutinized in light of indications by White House spokesmen that "as much as possible, this [defensive] research will be shifted from the Defense Department to the Department of Health, Education and Welfare."<sup>23</sup> Senator Charles Mathias, in reporting on his interview with Secretary of Defense Laird on the day of the President's speech, also indicated a trend in this direction.<sup>24</sup> A shift of CBW research to such agencies as the National Institutes of Health would be a deceptive victory indeed for CBW critics.

If the purpose of the President's speech was not, then, to indicate a major change in U.S. CBW activities, what was its purpose? It is interesting to note that the President's speech was delivered at a time when the Song My revelations had generated an international atmosphere of anti-American feeling. The speech produced the expected wave of congratulation from European capitals.

The speech also came at a time when the big powers were becoming increasingly fearful of the proliferation of relatively cheap CBW munitions among the smaller nations of the world, as indicated by the final ratification of the nuclear nonproliferation treaty by the U.S. and the USSR the previous day.

Perhaps even more important, the statement came within one day of the publication of Representative McCarthy's book, *The Ultimate Folly: War by Pestilence, Asphyxiation, and Defoliation* (Knopf, 1969), a high point in the anti-CBW movement.

Further, it came the day of the release of still another Congressional investigation which scrutinized U.S. CBW activities.<sup>25</sup>

Thus, while the President's minor restrictions may help the world to breathe a microscopic degree easier, the overall effects of the speech may be the opposite. The President's speech may have served to disarm the President's critics more than to disarm the U.S. CBW capacity.

—Written by Arthur Kanegis,  
NARMIC Research Assistant.

**NOTES**

<sup>1</sup> *Employment of Chemical and Biological Agents*, Army Field Manual FM 3-10, March 31, 1966, p. 7.

<sup>2</sup> This use is confirmed by sources as divergent as widespread newspaper accounts, first hand letters from soldiers in Vietnam (reprint in *War/Peace Report*, November, 1969, p. 17), testimony before congressional hearings (U.S., Congress, Senate, Committee on Foreign Relations, *Hearings on CBW*, 91st Cong., April 30, 1969 p. 34) and *Army* magazine itself ("Infantry Support Weapons," *Army*, October 1969), although the Pentagon officially insists that it uses these gases "to save lives" (Pentagon Press Release, September 23, 1969).

<sup>3</sup> "Thalidomide Effects from Defoliants," *Scientific Research*, Vol. 4, No. 23, November 10, 1969, p. 12.

<sup>4</sup> The Army classifies these chemical substances as incendiaries rather than chemical weapons, arguing that they kill people by burning and asphyxiation rather than by poisoning. However, the *Encyclopedia Britannica* defines Napalm as "an aluminum soap of naphthenic and palmitic acids which when mixed with gasolines form sticky syrup used in CHEMICAL WARFARE." The thickening substances used in Napalm were first developed in 1944-1945 under contract to the Chemical Warfare Service, and improved more recently by U.S. chemical companies (Dow's Napalm "B").

White phosphorous is also a chemical substance, and is manufactured in the chemical weapons production facilities at the Pine Bluff CBW Arsenal. (William Terry, "Huge Germ-War Arsenal Awaiting Orders to Close," *Washington Post*, November 27, 1969, p. A2.)

<sup>5</sup> Robert M. Smith, "Germ War: What Nixon Gave Up," *New York Times*, November 26, 1969, p. 16.

<sup>6</sup> Pierre Darcourt, "Le Temps Des Massacres," *L'Express*, March 14-20, 1966.

<sup>7</sup> Richard Homan, "Vietnam Use of Gas Could Block Treaty," *Washington Post*, November 26, 1969, p. A1.

<sup>8</sup> U Thant, "Report of the Secretary General on Chemical and Bacteriological (Biological) Weapons and the Effects of Their Possible Use," July 1, 1969, pp. 6-7.

<sup>9</sup> The 1969 edition of *Who's Who* included the following citations for Dr. Ivan L. Bennett: "special cons, Surgeon Gen, US Army Mem Commn on Epidemiological Survey 1966." "Armed Forces Epidemiology Bd." "Research Contract Dir., Army Chem Corps." "mem bd sci advisors, Armed Forces Inst Pathology."

<sup>10</sup> Richard McCarthy, "Banning CB Weapons—the Pressure Mounts," *War/Peace Report*, November, 1969, p. 19.

<sup>11</sup> Telephone interview with Dr. Ivan L. Bennett at his N.Y.U. Medical Center office, December 4, 1969.

<sup>12</sup> This definition, with emphasis added, was quoted from the *Dictionary of US Military Terms for Joint Usage*, August 1, 1968.

<sup>13</sup> Robert M. Smith, "20,000 Poison Bullets Made and Stockpiled by Army," *New York Times*, October 31, 1969.

<sup>14</sup> Telephone interview with Dr. Albert Hayward at the Pentagon, December 4, 1969.

<sup>15</sup> John Hanrahan, "Germ Warfare Ban is Expected to have Slight Effect on Detrick," *Washington Post*, November 26, 1969, p. A6.

<sup>16</sup> *Ibid.*

<sup>17</sup> Richard McCarthy, Press Release, "Remarks of Rep. Richard D. McCarthy at Tufts University-Medford, Massachusetts, September 15, 1969—CBW as National Policy."

<sup>18</sup> Defense Marketing Survey, as cited by Seymour Hersh, "On Uncovering the Great Nerve Gas Coverup," *Ramparts*, June, 1969, p. 15.

<sup>19</sup> Hanrahan, p. A6.

<sup>20</sup> Smith, "20,000 Poison Bullets."

<sup>21</sup> Terry, p. A2.

<sup>22</sup> Seymour Hersh, Dispatch News Analysis, Dispatch News Service, 1969.

<sup>23</sup> James M. Naughton, "Nixon Renounces Germ Weapons," *New York Times*, Nov. 26, 1969, p. 16.

<sup>24</sup> Hanrahan, p. A6.

<sup>25</sup> U.S., Congress, House, Committee on Appropriations, *Hearings, Department of Defense Appropriations for 1970*, 91st Congress, July 1, 1969 (released November 26, 1969).

<sup>26</sup> Botulinum toxin, derived from *Clostridium Botulinum*, as well as toxins derived from *Salmonella* and *Staphylococcus*, could be dispersed in a variety of ways in "chemical" biological warfare. Dr. Bennett himself noted: "It has been calculated that the placing of only 5.0 kilograms of botulinum toxin, a poisonous material produced by a bacterium (which, though biologically produced would be used as a chemical weapon) into a reservoir would result in the same degree of poisoning that would be achieved by dumping 10 tons of potassium cyanide into the water supply."—testimony before the House Foreign Relations Subcommittee on National Security Policy and Scientific Developments, November

ber 20, 1969, printed in the Congressional Record, November 25, 1969, pp. H11431-H11434.

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## REPORT OF THE NOMINATING COMMITTEE AND CALL FOR NOMINATIONS

The nominating committee of the FAS Council, under the chairmanship of Dan I. Bolef, has submitted the following slate of nominees for Vice-Chairman and for Delegates-at-Large of FAS. The Vice-Chairman's term will be one year, and he will *not* succeed to the chairmanship. The Delegates-at-large are elected for two-year terms. Additional nominees may be added to the ballot by a petition signed by five (incorrectly announced in the February issue as ten) members of FAS. Deadline for addition of nominees is March 31.

### NOMINEES FOR VICE-CHAIRMAN

GOLDBERGER, Marvin L., Princeton University

SIDEL, Victor W.

Montefiore Hospital and Albert Einstein College of Medicine

### NOMINEES FOR DELEGATES-AT-LARGE

CALLEN, Earl

American University

DASH, J. G.

University of Washington, Seattle

DRELL, Sidney

Stanford Linear Accelerator Center

FULLER, Richard C.

University of Minnesota

GOLDHABER, Michael H.

Rockefeller University

McINTYRE, John A.

Texas A.&M. University

MORRISON, Philip

Massachusetts Institute of Technology

PFEIFFER, E. W.

University of Montana

PRIMACK, Joel

Stanford Linear Accelerator Center

RODBERG, Leonard S.

University of Maryland

SAPERSTEIN, Alvin M.

Wayne State University

SCHWARTZ, Brian

Massachusetts Institute of Technology

STANFORD, George S.

Argonne National Laboratory

STEINFELD, Jeffrey I.

Massachusetts Institute of Technology

STONE, Jeremy J.

Council on Foreign Relations

TEPLITZ, Vigdor L.

Massachusetts Institute of Technology

LURIA, S. E.

Massachusetts Institute of Technology

## FAS NEWSLETTER

Federation of American Scientists

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Volume 23, No. 3

March, 1970

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