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CHEMICAL AND BACTERIOLOGICAL (BIOLOGICAL) WEAPONS

Note verbale from the Permanent Representative of the United
States of America to the United Nations addressed to the
Secretary-General

The Permanent Representative of the United States of America presents her compliments to the Secretary-General of the United Nations and has the honour to inform him that the United States has further information to provide pertaining to the use of chemical weapons in the continuing conflicts in Afghanistan, Kampuchea and Laos.

In February 1982, the United States Government received reports that the Vietnamese had conducted a chemical attack at Tuol Chrey, Kampuchea, on 13 February 1982. It is now in a position to provide information, based on analyses of blood samples collected less than 24 hours after the attack, and other human samples, including urine, which is consistent with trichothecene exposure and indicates exposure to a high concentration of T-2 toxin. Specifically, blood and urine samples taken from four victims of the 13 February attack were found to contain T-2 toxin; samples from two of the four also contained its metabolite, HT-2 toxin.

According to eyewitness accounts, the attack occurred following a day-long battle between resistance fighters and Vietnamese forces. Victims reported that the agent was delivered by Vietnamese troops firing 105 mm. artillery shells. Symptoms experienced by those affected included severe eye irritation, prolonged and repeated vomiting episodes, difficult breathing, trembling and severe diarrhea. A first-hand account of this chemical attack, and its results, was provided to Washington Post correspondent William Branigin and carried in an article in that paper on 6 March 1982.

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Blood samples were taken from two of the victims less than 24 hours after the attack. Blood drawn from Victim A (Prak Reth) showed a level of 18 parts per billion p.p.b. T-2 toxin and 22 p.p.b. HT-2 toxin. Blood from Victim B (Pen Nom) showed levels of 11 p.p.b. of T-2 toxin and 10 p.p.b. of HT-2 toxin. A urine sample from Pen Nom collected on 16 February 1982 was found to contain a trace quantity of T-2 toxin and 18 p.p.b. of HT-2 toxin. These levels are indicative of high levels of toxin exposure.

Additional blood samples were also drawn from Prak Reth and five other victims on 3 March 1982, by a private American physician, Dr. Amos Townsend. Two of the five other individuals who provided samples had detectable levels of toxin still circulating in their blood 18 days after the attack (7 p.p.b. T-2 toxin and 3 p.p.b. T-2 toxin, respectively).

Analyses of blood samples from four control individuals of similar age and background who had not been subjected to chemical attack were negative for the presence of trichothecene mycotoxins. Additional control samples and additional samples from these victims are currently under analysis.

All samples were submitted for analysis on a coded, blind basis, accompanied by appropriate positive and negative controls, to Dr. Chester Mirocha of the University of Minnesota. After extraction, all samples were analysed for products of T-2 metabolism by selected ion monitoring of the corresponding trifluoroacetylacetamide derivatives in a HP-5985B gas chromatograph mass spectrometer data system. All analyses were made using positive chemical ionization in methane. Major fragments of T-2 in chemical ionization were 401 and 563; and HT-2 fragments in chemical ionization were 455 and 617.

Positive identification of T-2 toxin and its breakdown product, HT-2, in the blood and urine of these individuals provides further confirmatory evidence of recent exposure to trichothecenes. The unusually high body-fluid levels of toxin (up to 22 p.p.b.) indicate exposure to a high concentration of toxin.

The symptoms attributed by these victims to the chemical agent with which they were attacked on 13 February 1982 are consistent with those caused by trichothecenes. Samples of blood from control individuals of closely matched age and background history who had not been exposed to the chemical agent contained no trichothecenes. Environmental control samples of vegetation, soil, water, corn and rice in the region also were found to contain no trichothecenes. These results indicate that these trichothecenes are not prevalent in the area and that exposure to these toxins in the natural environment is extremely unlikely. In addition, five samples from four separate "yellow rain"-associated chemical attacks in Laos and in Kampuchea have previously been shown to contain abnormally high levels of trichothecene mycotoxins. These facts, taken together, provide conclusive evidence that these trichothecene mycotoxins are components of the chemical agents known in Laos and Kampuchea as "yellow rain". Identification of the other components, including additional toxic molecules and man-made additives such as carrier-molecules, surfactants and possible skin penetrants, is continuing.

The detectable presence of T-2 toxin in the blood of victims 18 days after an attack indicates not only exposure to extremely high levels of toxin, but also

seems to indicate further the presence of a storage mechanism for the toxin within the body (as suggested after analyses of earlier blood samples). T-2 toxin is known to bind very strongly to certain cellular constituents, especially the sulfhydryl groups of some proteins (see review by Ueno in Mycotoxins in Human and Animal Health, Pathotox Publishers, Inc., Park Forest, Illinois, 1977, pp. 189-207). Therefore, although most of the toxin would be expected to be excreted within 24 hours, small amounts may bind strongly to proteins which remain circulating in the blood for much longer periods of time. The binding characteristic of the toxin may be an important factor in its long-term toxicity, and further scientific study is warranted.

The failure to detect HT-2 toxin in the blood samples collected 18 days after the attack when T-2 toxin was still present may be attributable to differences in the binding characteristics of T-2 and HT-2. It may also of course be attributed to differences in detection capabilities for the two toxins, since levels of T-2 toxin found 18 days after attack were on the threshold of detection limits, and analysis for HT-2 is considerably more difficult. Analysis of additional blood and urine samples from victims should provide the important data necessary to clarify the pattern of distribution, metabolism and excretion of these toxins in humans.

In accordance with General Assembly resolutions 35/144 C of 12 December 1980 and 36/96 C of 9 December 1981, the Permanent Representative of the United States of America requests that this information be provided to the United Nations Group of Experts to Investigate Reports on the Alleged Use of Chemical Weapons. Additionally, the Permanent Representative again requests that this submission be circulated as an official document of the General Assembly under item 54 of the preliminary list.

As it has done in the past, the United States will continue to co-operate fully with the Secretary-General and the Group of Experts, and will do its utmost to provide additional information and evidence, as it becomes available, and any further appropriate assistance which might facilitate the task of the experts.
