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Directorate of
Intelligence



Science and Weapons Daily Review

29 August 1982



Approved for Release
Date NOV 1987

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**SOUTHEAST ASIA: HIGH LEVELS OF MYCOTOXINS FOUND
IN VICTIM OF CHEMICAL WARFARE ATTACK (U)**

An autopsy performed on the victim tends to substantiate earlier conclusions that lethal toxins are being used in chemical attacks in Southeast Asia. (S)

[REDACTED]

[REDACTED]

Not
relevant

**SOUTHEAST ASIA: HIGH LEVELS OF MYCOTOXINS FOUND IN VICTIM OF
CHEMICAL WARFARE ATTACK (U)**

An autopsy was conducted by a Western physician trained in forensic pathology on a victim of a chemical attack that occurred in February 1982 in Kampuchea. The victim died one month after exposure to a "yellow rain" incident. The victim and four Democratic Kampuchean soldiers who survived the attack had high levels of trichothecene mycotoxins in blood and urine samples drawn two weeks after the attack. The autopsy specimens included the victim's heart, esophagus, stomach, liver, kidney, lung, and large intestine. They were submitted to several US laboratories for gross, microscopic, histopathological, and chemical-toxicological analyses.

The pathology found included: hemorrhage into the heart tissue with evidence of cell destruction and

[REDACTED]

[REDACTED]

[REDACTED]

inflammation, cirrhosis of the liver, hemorrhage and cellular destruction of kidney tubules, hemorrhage in the bronchi, and congestion and destruction of the lung. (S)

A trichothecene toxin, T-2, or its metabolic product, HT-2, was found in all the tissue specimens except the liver. Diacetoxyscirpenol, another trichothecene toxin was found only in the kidney tissue. Aflatoxins were found in the stomach, liver, kidney, and intestine samples. [REDACTED]

Control samples were negative for trichothecene and aflatoxin mycotoxins and their metabolic products. Examination of previous yellow rain residue from a different attack had shown high levels of trichothecenes, but was negative for aflatoxins. [REDACTED]

Comment:

The results of the autopsy provide objective evidence that:

- Reports from witnesses of yellow rain attacks are valid and that bleeding sometimes occurs in the lung, stomach, intestine, and kidney or bladder.
- Persons who are already debilitated, by malaria or liver disease for example, have a greater risk of death from trichothecene toxicosis.
- Microscopic examination shows tissue damage occurs in humans after heavy-to-moderate exposure to trichothecenes. The damage is similar to that found in experimental animals.



- Microscopic damage persists over a period of one month or longer.
- Trichothecenes are known to cause long-term damage to rapidly dividing tissue. These toxins accumulate and persist at least in the organs that were examined.
- Aflatoxin found in the tissues may be a food-borne illness and is not necessarily a component of the yellow rain substance. However, aflatoxins and trichothecene toxins act synergistically.

In general, the data support the events reported at the attack site. The soldiers were surprised but well covered by clothing, which reduced the effects of the attack on their skin. Some of them were incapacitated quickly due to inhalation effects rather than blistering of their exposed skin, and the most serious medical problems were found in persons who ingested contaminated material. Clinical findings prior to death included blood in the victim's urine, kidney failure, fever, jaundice, nausea, vomiting, and problems in the central nervous system. Clinical findings also possibly included falciparum malaria. Survivors had similar, but much less severe, signs and symptoms both shortly following the exposure to the chemical and in the ensuing month.

In this incident, the chemical was disseminated from a device triggered by a trip wire that had been placed along the paths leading from the battle site. The victim and several others had become incapacitated and fallen into a small body of water, which also had been contaminated. The victim reportedly had swallowed a good amount of the water, and was the only death resulting from the incident. (U)

[Redacted]

These findings strongly support our earlier conclusions based on subjective medical data, physical sample analyses, and reports from survivors of chemical attacks. We continue to believe that other chemicals, including other lethal ones, have been used in other attacks. We also believe the yellow rain substance possibly includes yet unidentified, man-made substances possibly including lung surfactants, skin-barrier penetrants, and incapacitants; these views are supported by laboratory data from two or three samples only.

[Redacted]

[Redacted]

not relevant

[Redacted]