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**New Evidence on the
1979 SOVIET ANTHRAX EPIDEMIC**

by

Professor Matthew Meselson

Harvard University, Cambridge, Massachusetts. An article in the March 15 issue of the Proceedings of the US National Academy of Sciences reports evidence that persons who died in the April-May 1979 epidemic of anthrax in the Soviet city of Sverdlovsk were infected by inhalation of anthrax spores, not by consumption of contaminated meat.

The year following the epidemic, an article in a Soviet medical journal stated that there had been an anthrax outbreak among livestock in March and April 1979 probably caused by contaminated fodder and that people had contracted cutaneous and gastrointestinal forms of the disease by handling and eating contaminated animal products (Journal of Microbiology, Immunology and Epidemiology No. 5, pp 111-113, May 1980). Contrary to this account, the US Department of Defense concluded that the victims had contracted anthrax (continued on page 5 - **Anthrax**)

(Anthrax - from page 1) through inhalation of anthrax spores released by accident from a military microbiological facility in the southern part of the city (Soviet Biological Warfare Threat, U.S. Department of Defense, 1986). On many occasions, the U.S. Government has expressed its concern the 1979 epidemic may have resulted from activities in violation of the 1972 Biological Weapons Convention, the international treaty that bans biological weapons.

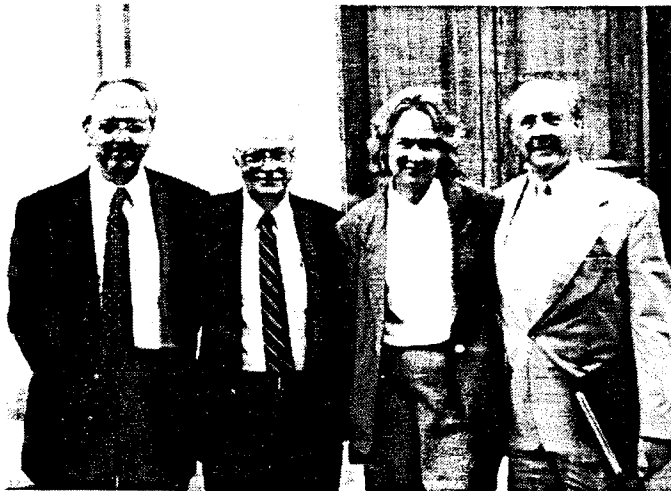
Last April after making repeated requests to Soviet and Russian officials, starting in 1983, I obtained an invitation to bring a team of scientists to Sverdlovsk to investigate the epidemic. The team included Professor Jeanne Guillemin, Department of Sociology, Boston College; Professor Martin Hugh-Jones, School of Veterinary Medicine, Louisiana State University; Dr. Alexis Shelokov, Government Services Division, Salk Institute; Professor David Walker, Department of Pathology, University of Texas Medical Branch; and Dr. Olga Yampolskaya, Department of Infectious Diseases, Botkin Hospital, Moscow. We were in Sverdlovsk, recently renamed Ekaterinburg, for 14 days, in June 1992. Our investigation was hosted by Ekaterinburg's Ural State University and was funded by the John D. and Catherine T. MacArthur Foundation.

In Ekaterinburg, study group members spoke with local physicians and public health officials; collected relevant documents that had escaped confiscation by Soviet officials; extensively interviewed relatives of many of the individuals who died; and, together with Sverdlovsk pathologists Faina Abramova and Lev Grinberg, who participated in autopsies of the anthrax victims in 1979, reexamined preserved organs and tissue samples from 42 of the 68 persons said, by the present Russian government, to have died in the epidemic. In collaboration with the two local pathologists who had already submitted papers to a Russian pathology journal concluding that the infections were inhalatory, Yampolskaya and Walker reexamined preserved tissues and organs from 42 victims of the epidemic. The article in the Proceedings, authored by Abramova, Grinberg, Yampolskaya and Walker is the first publication from our study. The article describes hemorrhagic lymph nodes in the thoracic region of all 42 cases of the series. Hemorrhagic lymph nodes were found in the gastrointestinal region in only 9 cases -- findings strongly indicative of inhalation anthrax. Although multiple hemorrhagic lesions were found in the gastrointestinal region of 39 of the 42 cases, the article cites evidence that most or all of these resulted from the spread of anthrax

bacteria through the bloodstream from a pulmonary site of origin. Although the authors point out that "... a study of the pathology of epidemiologically diagnosed intestinal anthrax is lacking ..." they argue cogently that the overall pattern of lesions is that expected for inhalational, not intestinal anthrax.

A second report from the study group, dealing primarily with epidemiological aspects of the outbreak and addressing questions of the timing and location of the release of anthrax pathogen into the air is in preparation. Among the several aspects of the outbreak still to be explained are the absence among those who died of persons below the age of 21, the occurrence of a number of cutaneous cases, and the nature of the activity responsible for the release of anthrax spores into the air.

In 1979 Boris Yeltsin was the governor of the Sverdlovsk region. Yeltsin was quoted in the 27 May 1992 issue of Komsomolskaya Pravda as saying that after the epidemic he asked the KGB's Andropov to investigate and that later the KGB admitted that the epidemic resulted from military developments. Little additional information has been made public by Russian officials. General Valentin Yevstigneyev, chief of Russian BW defense, stated that in 1979 work at the facility included the development of an anthrax vaccine, although he and General Anatoly Kuntsevich, head of President Yeltsin's Committee



Four members of the study group meet in Ekaterinburg (Sverdlovsk): (l to r) Professors Martin Hugh-Jones, Alexis Shelokov, Jeanne Guillemin and Matthew Meselson (team leader)

on Problems of Chemical and Biological Convention Matters, continue to express doubt the military facility was the source of the infection (Izvestiya 17 April; Rossiyskiye Vesti 22 September 1992). As a result of the pathological findings, however, suspicion naturally focuses on the facility.

At this point, much could be gained from a truly cooperative study of the 1979 epidemic by knowledgeable officials from the Russian BW defense establishment conducted jointly with Western scientists. A full knowledge of the origin of the 1979 anthrax epidemic and of its medical and epidemiological aspects is important not only for improved prevention and treatment of the disease, still a veterinary and public health concern in many countries, but also for helping to establish an international standard of openness between Russia and the West in manners relevant to the Biological Weapons Convention of 1972.

Ed.Note: Professor Matthew Meselson is the Sverdlovsk study group organizer and leader. He is Professor of Biochemistry and Molecular Biology and The Thomas Dudley Cabot Professor of the Natural Sciences at Harvard University. Prof. Meselson was instrumental in developing the BWC and has always been a strong advocate for the CWC. He chairs the Harvard CB Weapons Colloquium and co-chairs the Pugwash Working Group on CW. ###