

## B-13 Evaluation of Risks of Global Warming on Human Health

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Malaria

(1) Global warming has potential impacts on human health during extreme high temperature in summer. The epidemiological results showed that hyperthermia caused by heat stress induced many heat stroke patients and increased in morbidity and mortality during heat wave in Nanjing, China.

Since heat stress greatly induced lipid peroxidation in liver, hyperthermia developed hypertrophy and vacuolized degeneration in hepatic cells. Protective enzymes, such as glutathione peroxidase activities were induced in hyperthermia. Heat stress also affected central nervous systems and changed the sleeping behaviour.

(2) People's behaviour on temperature control using air conditioner at home and office was studied. In office, the actual temperature was lower than the comfortable level. Patients of hypertension and electrocardiogram abnormality had a lower temperature in office.

Local temperature had a significant negative relationships with the total calorie, protein, lipid, and carbohydrate intake in rural area during 1982-1986, which disappeared in 1987-1990. Mortality related with the maximum daily temperature and increased above 33°C of local maximum temperature.

(3) To study the potential spread of malaria, field survey was carried out. The field survey of malaria in Yunnan Province of China showed that the different malaria endemicity (high-endemic, low-endemic, non-endemic areas) had the different local temperature. The mosquito survey in several islands in Ryukyu Archipelago confirmed the marked redistribution of vector species.