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FACULTY OF SCIENCE

August 2, 1979 4700 KEELE STREET, DOWNSVIEW, ONTARIO M3J 1P3

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The Honourable John Fraser, P.C., M.P.
Minister of the Environment
Room 507
Confederation Building
Ottawa, Ontario
K1A 0X2

Dear Mr. Fraser:

On behalf of the members of your Advisory Committee on Mutagenesis, I take pleasure in transmitting to you the attached memorandum. This document reflects the unanimous judgement of the Committee on the potential impact of chemical mutagens on human health and the environment, together with our present recommendation regarding the use of mutagenicity data in regulatory decisions on chemicals.

The Advisory Committee on Mutagenesis was established jointly by the previous Ministers of National Health and Welfare and the Environment under the provisions of Section 3(4) of the Environmental Contaminants Act. The terms of reference of the Committee are as follows:

- (1) To review data relating to the mutagenicity of chemicals pursuant to Section 3(3) (a) of the Environmental Contaminants Act.
- (2) To advise on the evaluation of mutagenicity tests and the significance of such tests in terms of hazard to human health or the environment.

The Committee consists of eight scientists drawn from universities and non-Government Organizations (Annex 1). The Mutagenesis Section of the Environmental Health Directorate, Health Protection Branch, provides the Secretariat for the Committee.

Sincerely yours,

Robert H. Haynes

Robert H. Haynes
Professor of Biology

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Memorandum from the Advisory Committee on Mutagenesis To
The Ministers of National Health and Welfare and Environment

Many chemicals cause heritable changes in the structure of genes and chromosomes. These changes are called mutations and the agents that cause them are called mutagens. Most mutations are deleterious. Current estimates are that about 1% of chemicals (both natural and man-made) are mutagens in bacterial test systems, or may be converted to mutagens by metabolic processes. Mutagenicity is known to be correlated with cancer induction in animals. People are exposed to a large number, and ever increasing amounts, of chemicals. Thus, all of us are undoubtedly exposed to mutagens, to a greater or lesser degree. The magnitude of the effect of this exposure is difficult to assess. Nevertheless, it is apparent that a hazard exists. This hazard has two components, the hazard to the exposed individual in the form of such diseases as cancer, and possibly even atherosclerosis, and the hazard to future generations in the form of birth defects and diseases of genetic origin. Cancer and genetic diseases are major contributors to health care costs in Canada. Related effects occur in natural and domestic populations of plants and animals, which may be of particular concern to man, for example, endangered or economically important species. In contrast to these long-term costs, assays for mutagenicity are rapid and inexpensive.

Decisions to regulate the use of chemicals should take into account the mutagenicity of the chemical and the nature of any genetic changes produced. The Committee is examining the tests which are available for detecting mutagenicity and is considering their value for predicting the ability of chemicals to induce cancer and hereditary defects. The Committee is reviewing strategies for the incorporation of such tests in evaluation programs. In the meantime, the Committee is unanimous in recommending that mutagenicity data should be included as a part of the toxicological evaluation that may lead to regulatory decisions.

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