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Introductory Remarks: Conference on Pollutants and High Risk Groups

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In the language and intent of the various laws which EPA implements, Congress has mandated that we consider the issues of the biological basis of hypersusceptibility to pollution. For example, the Clean Air Act Amendments of 1970 require EPA to set ambient air quality standards to protect the public health with a margin of safety, including protection of particularly susceptible groups within the population such as asthmatics and bronchitics. Consequently, EPA's air pollution epidemiological research has focused heavily on relating acute or chronic symptoms in asthmatics, the aging, and other specially susceptible population groups to measured air pollution exposure levels. Symptoms in hypersusceptibles may provide early sentinels of more serious illness in the most sensitive population groups. Such symptoms also often predict that higher levels of exposure—or continued exposure to low levels—will lead to symptoms in much larger proportions of the general population.

Additional EPA legislation, such as the 1972 Amendment to the Federal Insecticide Fungicide and Rodenticide Act and the Toxic Substances Control Act of 1976, require EPA to assess the health risks of chemicals so that these may be balanced against their benefits. A risk estimate implies the need to know the impact of adverse effects of a chemical on entire exposed populations. Such risk estimation demands that we step back from the homogeneous animal strains which we have used to determine effects of chemicals in order to consider the whole range of effects of chemicals on the genetically varied, multiple-exposed species which is modern man.

The most meaningful program to assess the health effects of chemicals requires a balance of epidemiology, clinical research, animal toxicology, and *in vitro* studies. This is because each of these techniques had advantages and limitations which the others lack. Our focus at this conference places the emphasis on clinical research and epidemiology to examine those persons especially sensitive to environmental chemicals. Hopefully, such an emphasis will lead to the development of better animal and *in vitro* systems for detecting those levels of chemicals which will cause illness in susceptible groups before they are introduced into the human environment and can cause disease.

Since the banning of DDT, there has been great enthusiasm with the notion that action can and should be taken based on animal studies without having to first show frank disease in people as a prerequisite to the institution of environmental controls. What the chemical regulatory agencies must always keep in mind, however, is that only close contact with the clinical researcher and epidemiologist will permit them to identify and abate the toxic hazards which laboratory investigations fail to screen out. This is still true even when we are consciously attempting to select animal and cellular screens which are highly susceptible to the hazards which we suspect.

Traditionally, regulatory agencies have focused upon those groups in which hypersusceptibility could be demonstrated pathologically and physiologically, such as patients with cancer and congenital abnormalities. But in the last decade, both the Occupational Health and Safety Act of 1970 and the Toxic Substances Control Act of 1976 emphasize a need for research and testing of the effects of chemicals on behavior in the absence of demonstrated cellular or biochemical abnormalities.

The limited time available has forced the planners

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of this meeting to touch only lightly upon several important causes of pollution-induced hypersusceptibility. Perhaps the major causes of hypersusceptibility are still unknown or just beginning to emerge. Nevertheless, a program has been assembled which broadly covers some of the well documented causes of hypersusceptibility to environmental chemicals. Hopefully, this meeting will serve to stimulate further research and several future scientific discussions which will cover these and additional facets of hypersusceptibility in greater depth.

In the final session, we will see how high risk groups are being considered in the standards setting process. We hope to learn how to improve the manner in which this is being done, with subsequent impacts on the thinking of the public, their representatives, government, unions, and industry.