ASSESSMENT OF HEALTH IMPACT OF ENVIRONMENTAL CHEMICALS

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Controlling the Chemical Environment

Two main reasons exist for the growing concern about the effects of chemicals on human health. One is a profound quantitative and qualitative change in the exposure of human populations to naturally occurring substances and to new compounds synthesized by intention or as the unintended by-products of new technologies. Recent estimates of the number of chemicals used in daily life exceed several tens of thousands, including several thousand compounds in drugs, several thousand substances as various food additives and more than one thousand chemicals as active ingredients in different pesticides. In addition, industrial technology, power production and transport produce wastes that may be eventually found as pollutants in the air, water, soil and food. Before reaching the environment, many of these chemicals escape into the workplace. Homes are exposed to a variety of consumer chemicals, some of which may be contaminated with impurities of toxicological importance.

The second reason for the growing concern with the health effects of chemicals is the increasing knowledge of their adverse health effects. Episodes of intoxications affecting populations exposed to such chemicals as alkylmercury compounds or chlorinated organic compounds have been reported recently in Japan, Iraq and Turkey. Several thousand people were seriously affected in these outbreaks, with permanent disability and even death resulting in many cases. However, these episodes, as well as instances of occupational or acute accidental intoxications, represent only a part of the problem. Growing evidence, based on animal experiments and epidemiological studies, indicates that chemicals can play an important role in the etiopathogenesis of certain chronic diseases, either by being a major causative factor or by modifying the effects of other pathogens. The course and outcome of other diseases may be changed by exposure to chemicals. Increasing incidence of some