

Preface

In the legislative history to the Clean Air Act Amendments of 1970, the Senate described how broad the protection afforded by air quality standards was to be as follows [1]:

In requiring that national ambient air quality standards be established at a level necessary to protect the health of persons, the Committee recognizes that such standards will not necessarily provide for the quality of air required to protect those individuals who are otherwise dependent on a controlled internal environment such as patients in intensive care units or newborn infants in nurseries. However, the Committee emphasizes that included among those persons whose health should be protected by the ambient standard are particularly sensitive citizens such as bronchial asthmatics and emphysematics who in the normal course of daily activity are exposed to the ambient environment. In establishing an ambient standard necessary to protect the health of these persons, reference should be made to a representative sample of persons comprising the sensitive group rather than to a single person in such a group.

The consequences of this directive are not surprising. Concern for the most sensitive or susceptible groups within the general population drives the setting of air quality standards. In turn, much of the health-research must focus on identifying sensitivity, pollutant by pollutant. At the most fundamental levels of research, there is interest in determining the mechanisms for specific forms of sensitivity.

The U.S. Environmental Protection Agency carries out the mandates of the Clean Air Act. In defining sensitivity, the Agency has stated [2]:

The population at risk is a segment of a defined population exhibiting characteristics associated with significantly higher probability of developing a condition, illness, or other abnormal status. This high risk may result from either greater inherent susceptibility or from exposure situations peculiar to that group. What is meant by inherent susceptibility is a host characteristic or status that predisposes the host to a greater risk of heightened response to an external stimulus or agent.

Here, sensitivity is couched in terms of risk. It is an expensive definition, one that includes within its bounds, groups who are at risk because of exaggerated exposure as well as those who have some innate, predisposing trait. The most obvious way of exaggerating exposure is, of course, through exercise.

It is against this background of regulatory concerns and scientific interests that a conference entitled Susceptibility to Inhaled Pollutants was held in Williamsburg, VA, in Sept. 1987. The agenda, although scientific, remained cognizant of the central role of such information to standard setting, as discussed in the paper of Dr. Lippman. The sessions dealt with five major topics: markers of susceptibility; characterization of study groups and responses to exposure; exercise and regional dosimetry; and in the last two sessions, different models of

susceptibility, in particular, asthma. The book that follows is a peer-reviewed record of the conference, organized along much the same lines.

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References

- [1] Senate Committee on Public Works: A Legislative History of The Clean Air Amendments of 1970, Serial No. 93-18, 93rd Congress, 2nd Session, 411, 1974.
- [2] U.S. EPA Air Quality Criteria for Lead. Chapter 13, Page 11, 1977.