LEAD TETRAETHYL ("ethyl") was introduced about 45 years ago as an antiknock additive to gasoline. Shortly thereafter, it was recognized as an industrial health hazard following the deaths of some workmen handling it. Public health officials and the oil refining industry reacted promptly to the occupational problem but left unanswered the question of how lead particles from auto exhausts affect the population. With the increasing demands made by high-performance auto engines, the use of lead in gasoline has increased tremendously. Today, about two pounds of lead per capita are blown into the air of the United States each year. The levels are highest, of course, in such urban centers as Los Angeles.

Lead is well known as a poison. Until lead-based paints were restricted, there were many cases of brain damage to young children who had nibbled the paint from peeling walls and toys. We are, however, in a serious quandary about the hazard from the present levels of lead in the environment.

The most persuasive argument of the oil industry is that no case of lead poisoning can be proven to have resulted from airborne lead originating from auto exhausts. It is generally accepted that lead exhaust could be practically eliminated but only at a probable cost of at least one cent a gallon of gasoline. The prohibition of lead antiknock would, furthermore, discriminate against smaller, less efficient refineries, which would be less able to reconstruct their fuel mix to meet antiknock requirements in other ways.

On the other hand, clear-cut symptoms of lead poisoning have not been reported at less than 800 ppb and 1000 to 1500 ppb are usually required to be acutely dangerous. Yet if blood levels were a direct indicator, they would suggest a safety margin of only two- or three-fold above the present readings.

Unfortunately, we are quite ignorant of important details about the way that lead is handled by the body. Some individuals may dispose of lead less efficiently than the average or be more sensitive to present levels. In fact, this can be theoretically predicted for certain rather common genetic diseases of the red cells.

For "normal" individuals, we could speculate that 500 ppb in the blood would be safe. Over this level, the kidneys operate to eliminate excess lead in the urine. Thus much more lead would have to be absorbed to drive the content from 600 ppb to toxic levels over 800 ppb.