

STATE OF IDAHO)
 : ss.
County of Shoshone)

RONALD K. PANKE, being duly sworn on his oath, deposes and says:

I am a physician in private family practice in Kellogg, Idaho. Near Kellogg, in Shoshone County, there is a large lead mining and primary lead smelting complex. During the fall of 1974, blood lead levels of children in the surrounding community were jointly surveyed by state and federal agencies in order to ascertain the prevalence of increased lead absorption. I served on the Technical Advisory Committee of the Shoshone Lead Project and I am familiar with the various reports and studies growing out of the 1974 survey. As this suggests, I have a profound professional and personal interest in increased lead absorption in children. Based on my experience, and what I believe to be an extensive knowledge of the literature on lead poisoning, I am persuaded that the Environmental Protection Agency has proposed an ambient air quality standard for lead that is far lower than the level required to protect children from adverse health effects. I take this position because the blood lead level which the proposed standard aims to achieve, of 15 ug/dl, is substantially lower than would be dictated by the most stringent safety

margin in order to protect children from adverse health effects.

In my years of practicing medicine, I have examined hundreds of children from the lead complex area. In addition, the seven doctors that practice in the same clinic as I do have a combined total of 137 years of medicine in this geographical area. I, nor my colleagues, have not seen one documented, substantiated case of any child suffering any adverse health effect from increased lead absorption.

Some of the children I have seen were the subject of a study in 1974. These children were subjected to an extensive medical work up, including EP, HGB, HCT, nerve conduction velocity studies and exhaustive neurological tests. I have seen no evidence indicating any lead-related adverse health effects in these children whose blood lead levels were in the 15 - 40 ug/dl range.

Indeed, the 1974 Shoshone County field study survey revealed children with blood lead levels in excess of 40 ug/dl of whole blood, but still no symptomatic cases of acute or chronic lead poisoning were found. These initial findings prompted further investigation to determine, among other things, whether there were any medical consequences in these asymptomatic children associated with blood lead levels of 40 to 80 ug/dl. These medical consequences have been described as "subclinical" effects by some investigators. The Technical

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Committee concluded, after reviewing extensive medical and environmental data collected in the Shoshone County area, that: (1) no permanent clinical impairment or illness had occurred; and (2) no clinical impairment or illness was likely to be seen attributable to the lead exposure.

It should be noted that the children studied who had the highest blood-lead levels were sent to the University of Washington Medical School for even more testing and examination. I am familiar with the results of those tests, all of which I consider normal.

Studies of the Shoshone data suggesting that there may be "subclinical" effects at levels as high as 40 to 80 ug/dl are contradicted by other evidence. One study^{1/} reported a significant statistical negative correlation between blood lead levels and motor nerve conduction velocity among a group of five to nine year old children with blood lead levels of 40 ug/dl or higher. Even so, the authors noted that none of the children studied had any clinical evidence of neurological abnormality or pathology in conduction velocities.

Even this mild finding of "subclinical motor neuropathy" is questionable. Further studies of more closely matched

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1/ Landrigan, P.J., E.L. Baker, Jr., R.G. Feldman, D.H. Cox, K.V. Eden, W.A. Orinsken, J.A. Mather, A. J. Yankel, and I.H. von Lindern. Increased lead absorption with anemia and slower nerve conduction in children near a lead smelter. J. Pediatr: 89(6): 904-910, Dec. 1976.

pairings from the same sample group of children demonstrated no significant difference in nerve conduction velocity between the group with blood lead in excess of 40 ug/dl and that with blood lead below 40 ug/dl.^{2/} Some of the children studied by Landrigan who were found to have slowed nerve conduction velocities were retested by University of Washington Medical School investigators. This "subtle" change of slower nerve conduction velocity was then found to be entirely normal in these same children. The differences in nerve conduction velocity were so minimal, that members of the technical committee felt they could be attributable to minor technical aspects in performing the tests.

In sum, the existence of even a "subtle subclinical effect" from lead was not apparent in the children whose blood lead level ranged between 40 and 80 ug/dl, and the possibility of any adverse health effect in children with blood lead levels lower than 40 ug/dl can safely be ruled out.

It should be constantly born in mind that the purpose of EPA's proposed regulation is to protect children. That coincides with a primary goal of the physicians in this community. We practice preventative medicine as well as treat patients. We have, over the years, had no reason to

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^{2/} Gartside, P.S., R.K. Panke, "A discussion concerning the significance of results for children tested in the Shoshone project," Shoshone Lead Health Project, pp. 116-19 (1976).

hide medical evidence, and every reason to dispense epidemiological information when necessary. It is significant then, that we have followed babies from time of birth into adolescence, and yet have not seen a single incidence of documented lead intoxication. It has been my observation that newborns with blood lead levels over 15 ug/dl have suffered no adverse health effects and have been observed to have normal development patterns.

Furthermore, I have personally queried the rest of the medical community in North Idaho and Eastern Washington, our major referral medical centers. I have discussed lead intoxication problems in youngsters and adolescents with many pediatricians, internists, and family practitioners. I have not talked to a single physician who has seen adverse medical effects attributable to lead, even though many of their patients from this area have been those same children for whom we have records of blood lead values greater than 15 ug/dl. Incidentally, the physician who first diagnosed the two children as possibly having lead intoxication (which lead to the massive study of children in the Kellogg area) later concluded that in all probability, their symptoms were due to a non-specific gastroenteritis.

The adverse health effect which EPA says its standard is designed to protect children against is elevation of erythrocytic protoporphyrin (EP). Of course, EP may be

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elevated by factors other than increased lead burden, such as iron deficiency anemia. More fundamentally, however, I am not aware of any medical evidence that elevated EP is, in itself, an adverse health effect. To the contrary, it appears that EPA has confused the metabolic reaction of protoporphyrin in the presence of lead with an adverse health effect. However, the accumulation of metabolites in the presence of lead at blood lead levels below 40 ug/dl does not represent an adverse impact on human health. Rather, the metabolic reaction of protoporphyrin to blood lead is simply one of many early body reactions to substances like lead which naturally occur in the environment, and only when these reactions reach the level of lead toxicity is there an adverse health effect.

As an illustration, one might compare the reaction of the skin to sun exposure. Here, at very low levels of exposure, a metabolic change is produced. This is a benign and reversible effect at the cellular level. But only at a higher level of exposure is there an impact which can be described as adverse to human health. The same is true of elevated EP. Only when the production of hemoglobin is significantly reduced does lead have an adverse health impact. Because this does not happen at blood lead levels below 40 ug/dl, EPA can use a blood lead level markedly

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higher than 15 ug/dl in developing its air quality standard while still providing a wide margin of safety.

R K Panke M.D.

Ronald K. Panke

Subscribed and sworn to before me this 24 day of February, 1978.

James S. Linnert
Notary Public for the State of Idaho
Residing at Kellogg, Idaho

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