Mr. GORDON. How meaningful is this prohibition?

Dr. GRINSPOON. Anybody who wants to abuse it intervenously can dissolve amphetamine in water and inject it.

In fact, there is greater risk in doing that than there is with pharmaceutical materials which are sterile and carefully prepared.

Homemade intravenous injections are not, so there is more danger there.

Not only can they inject only the amphetamines, but it may be coupled with something else, and in fact, a number of young people have done this, and particles in the retina of the eye have appeared, which have been visualized on examination by ophthamologists.

Furthermore, they pointed out that they had found no evidence of necrotizing angiitis in a number of similar young drug abusers who had not taken amphetamines, but had used equivalent amounts of all the other "hard" drugs reported by the 14.

In late 1971, two papers by another group of California researchers led by C. L. Rumbaugh presented observations and experimental findings that have all but conclusively proved Citron's initial theory.

These investigators subjected 19 multiple-drug abusers ranging in age from 16 to 39 to cerebral angiography, an X-ray technique in which a dye is injected into a patient's circulatory system, allowing physicians to examine him for possible blockage of the arteries supplying his brain.

Rumbaugh and others found that 14 of their 19 patients showed moderate to severe occlusion, and the other 5 showed at least minimal brain damage of this sort.

Although all of the patients either admitted to or were suspected of amphetamine abuse, they had abused so many other drugs that it was impossible to blame speed as the sole or primary etiological agent.

Accordingly, Rumbaugh and others administered methamphetamine by needle to five monkeys at dosages roughly equivalent to 50 to 100 milligrams for humans.

Ten minutes after the first injections the researchers noted decreased caliber of many of the smaller arteries supplying the brain, with either slowing or total blockage of blood flow in some arteries in four out of five monkeys. At the end of 2 weeks of every-other-day injections, autopsies revealed irreversible damage to the brain. Rumbaugh has recently pointed out that these investigations and laboratory experiments strongly suggest that intravenous methamphetamine is the likely cause for the abnormally high incidence of "stroke" victims among the 15 to 25 age group in the Los Angeles area. Rumbaugh stresses that a stroke-type reaction may follow even low-dose oral use of amphetamines, because of the wide variations in susceptibility to the toxic effects of amphetamines.

It is perhaps easiest to grasp a sense of the real dimensions of the psychological dangers inherent in amphetamine use if we consider only the most serious and disruptive effects. Although restlessness, dysphoria, logorrhea (excessive talkativeness), insomina, some degree of confusion, dizziness, transient nausea, tension, anxiety, and fear to the point of acute panic have been reported by a large number of authors, these effects are probably best considered as inseparable components of the amphetamines' alerting, stimulating, and "euphoric" properties. But amphetamine psychosis, even though it was once considered