

short-term standard which was adapted from criteria, whereas if we relied only on, say, annual exposures the experimental approach would be so long that we might not be able to do it?

Dr. MIDDLETON. That is why I prefaced my remarks by the mathematical association of short term with long. And whereas the relationship varies somewhat from area to area, one has to use ambient air quality data itself.

Mr. CARPENTER. Yes.

Dr. MIDDLETON. This would allow the research worker to project in his experimentation those figures or those numbers that may meet what his particular research needs were.

Mr. CARPENTER. Well, would you say that it would be worth while before the next step was taken, that is the translation of ambient air standards to emission-source restrictions and perhaps substantial changes in industrial or municipal or personal practices, to conduct confirming experiments at the very point on the concentration-time chart that you chose as your standard, to go in with animals or with human volunteers and to confirm that this was a threshold of response?

Dr. MIDDLETON. This confirmation, whether it is laboratory or field, is not so much the question since the documents that relate to criteria contain both.

I think maybe what you are referring to is the fact that in making a diffusion model to relate pollution emissions to the ambient air quality standard, by their geographic location, knowing something about the tonnage being put out, the meteorology of the area, one then can predict what the ground-level concentrations would be from a particular source for a particular period of time, and the air pollution control agency may wish to validate whether in fact this occurs.

That is a different kind of validation, and I would see this would have some merit in getting at emission standards to be determined by local governments, but I don't see the need to validate the earlier question you are talking about.

Mr. CARPENTER. You would say that retrospective data taken into consideration in publishing the criteria would be adequate, would contain this confirming evidence at the point, at the chosen standard point?

For example, in a concentration-time plot, if you decided on a dose which in fact might not have corresponded actually in time and concentration to some retrospective research on an historical episode or on animal work, your interpolation here would be adequate and you would not perform confirming experiment at that dose?

Dr. MIDDLETON. I am really not talking about the confirmation. We are talking about the fact that the several categories of events that take place, that are health effects, are fairly well described as to whether they are chronic or acute, and that we already know something about the dosage, in other words, the time concentration. And regardless of where those will be located you can expect those effects to take place.

So if you are talking about validation and trying to get an integration of chronic and acute—

Mr. CARPENTER. No, I am not, really. I was just simply talking about where, if you wanted 24-hour standards and, in making up your