February 23, 1967

Robert Armbruster, M.D.
Palo Alto Medical Clinic
Palo Alto, California

Dear Dr. Armbruster:

I'd like to thank you very much for our telephone discussion recently about occupational medical programs and their coverage. It was very useful to me.

I promised then to send you some information relevant to chromosome aberrations in workers. To my knowledge there's very little specifically on occupational application. There's the information from Bender on follow-up of the Y-12 radiation accident at Oak Ridge. He probably has some information on other accidents by now, as the AEC is set up to obtain material for his studies in the event of any significant radiation accidents.

On routine use in workers I've seen nothing. I mentioned some studies by Norman that included LRL Berkeley employees. You'll find that in the brief bibliography below.

There is, of course, a large and very rapidly growing literature on the general subject of chromosome aberrations in humans. Bill Loughman at Donner Laboratory at U. C., Berkeley, has a very extensive bibliography which would help get started studying that material. I'm sure he would be glad to let you or your colleague see it, or to show you how they do their chromosome studies. In looking through his bibliography, I saw nothing on occupational exposure to chemicals or radiation except Norman's article. W. M. Court-Brown in England is the only other one who I know for certain is collecting information on radiation workers, but a number of people are collecting data on chromosome aberrations following therapeutically and diagnostically administered radiation.

I think Norman in Los Angeles, Bender at Oak Ridge and Court-Brown in England would be your best sources of information.

I mentioned automation of chromosome analysis and the informal meeting on the subject that I attended in Vienna in 1966. The Perkin-Elmer Corporation was the company I mentioned that might tell you the present status of the several projects for automating. I think the techniques are still a long way from ready for extensive screening purposes--they are still very tedious and require experts, and their automation is pretty far in the future. Dr. H. D. Bruner in the USAEC, Division of Biology and Medicine, in Washington is also a possible contact for up-to-date information on automation of chromosome analysis.

Here is the bibliography:

1. Norman, A., Sasaki, M., Ottoman, R. E., and Veomett, R. C. Chromosome aberrations in radiation workers. Radiation Res. 23: 282, 1964.

2. Norman, A., Sasaki, M. D., Ottoman, R. E., and Fingerhut, A. G. Elimination of chromosome aberrations from human lymphocytes. Blood 27: 706, 1966

3. Bender, M. A. and Gooch, P. C. Persistent chromosome aberrations in irradiated human subjects. Radiation Res. 16: 44, 1962.

4. Bender, M. A. and Gooch, P. C. Persistent chromosome aberrations in irradiated human subjects; II. Three and one half year investigation. Radiation Res. 18: 389, 1963.

5. Court-Brown, W. M., Buckton, K. E., and McLean, A. E. Quantitative studies on chromosome aberrations in man following acute and chronic exposure to x-rays and gamma rays. Lancet 1: 1239, 1965.

6. Kelly, S. and Brown, C. D. Chromosomal aberrations as a biological dosimeter. Am. J. Public Health 55: 1419, 1965. (I haven't read this one yet. It's title looked interesting.)

If I can help you further, don't hesitate to let me know.

Sincerely,

Howard G. Parker, M.D.,Ph.D.

HGP:mcw